

The background of the entire page is a faded, grayscale photograph of three Army helicopters, likely AH-64 Apaches, flying in formation over a grassy field. The helicopters are positioned diagonally from the top left towards the bottom right. The image is intentionally faded to serve as a backdrop for the text.

# **ENVIRONMENTAL MANAGEMENT SYSTEMS ASPECT AND IMPACT METHODOLOGY FOR ARMY TRAINING RANGES**

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- ◆ Block, Marilyn R. Identifying Environmental Aspects and Impacts. American Society for Quality, 1999.
- ◆ Cascio, Joseph, et al. ISO 14000 Guide. McGraw-Hill, 1996.
- ◆ Cascio, Joseph, Editor, The ISO 14000 Handbook. ASQ, 1996.
- ◆ ISO 14001: Environmental Management Systems - Specification with guidance for use. 1996.
- ◆ ISO 14004: 1996(E), Environmental Management Systems – General Guidelines on Principles, systems and supporting techniques, first edition.
- ◆ McDonough, William and Michael Braungart. Cradle to Cradle. New York: North Point Press, 2002.
- ◆ U.S. Army Environmental Management System Implementer's Guide, May 2003.
- ◆ U.S. Environmental Protection Agency, Environmental Management System, Implementation Training Course, Spring 2003.

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# CHAPTER 1

## ARMY RANGE ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) BACKGROUND

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### 1.1 PURPOSE OF THIS GUIDE

*The Army Training Range Aspect and Impact Methodology* is intended to support and be an integral component of the installation-wide EMS. It provides appropriate, range-specific guidance on completing the environmental aspect and impact analysis - one of the more demanding requirements for an EMS. This guide is intended to serve as a compromise between an overly prescriptive or cumbersome analysis, and one that is vague, subjective and non-standardized. Throughout its development, efforts were made to strike this balance so that the methodology was both useful and easily implemented by installation staff without external assistance.

This guide helps Army personnel identify the environmental aspects of range activities and provides criteria to help characterize those aspects. The methodology presented ensures that the installation's EMS addresses range environmental issues while focusing on mission priorities. While the identification of environmental aspects alone will not result in a fully functioning EMS, it does provide the foundation upon which the other components of the EMS can then be structured. The output of the analysis discussed in this guide is a list of significant environmental aspects in their order of priority and importance for both the training mission of the organization and for the natural environment.

### 1.2 BACKGROUND ON ARMY IMPLEMENTATION OF EMS

#### 1.2.1 Why Consider an EMS?

The Army has a mature environmental program that has led to notable improvements over the past several years. This has not, however, decreased the number of complex challenges, such as encroachment, sustainability of active ranges and infrastructure, and transformation of doctrine and weapon systems. In addition, the Army still confronts many internal issues in managing its existing large and multi-faceted environmental program. The implementation of a formal management framework can enhance interoperability among installation programs, the commitment and involvement of leaders, and the awareness and participation of personnel in the achievement of the Army's environmental objectives.

A standardized environmental management model, such as EMS, will allow Army installations to more reliably and methodically support the mission needs of its tenant organizations. It will

also help to standardize best management practices and improve environmental performance. An EMS alone will not provide the solution to all of the Army's environmental issues. It will, nonetheless, facilitate operational practices that lead to well-informed decision-making, and ultimately to improved mission readiness.

## 1.2.2 Risk, Mission, and EMS

Among the characteristics that distinguish a structured EMS approach from previous models are its provisions for employee involvement, heightened management visibility, and continual improvement. One characteristic, however, stands out above all others: – **the driver for environmental initiatives in an EMS is risk assessment, not regulatory mandates.** The EMS is designed primarily to manage, reduce, and eliminate risks to the environment and to the organization. It is the organization that decides what are its important risks and develops strategies to evaluate, rank and minimize or eliminate those risks.

The Army's primary mission is to train soldiers to fight and win wars. Soldiers must be trained under the same conditions, using the same tactics and procedures as they would encounter in combat. A major risk facing the Army today is the increased restriction to realistic combat training of soldiers at ranges due to ever increasing pressures from environmental regulations and surrounding communities. Traditional compliance based approaches to environmental management do not fully address these risks to mission. Regulatory requirements are still important in helping to qualify the risks and determine appropriate program elements, but they are no longer the only drivers. The impacts of unregulated environmental risks to the Army's mission have become more prominent and need to be given consideration if they are to be addressed properly. This moves environmental action from a reactive to a proactive posture to address environmental risks to the mission.

## 1.2.3 Applicable EMS Requirements

In April 2000, President Clinton signed Executive Order (EO) 13148 "*Greening the Government through Leadership in Environmental Management*" that established a five-year Environmental Management System (EMS) implementation goal for all federal facilities. EO 13148 requires an EMS at all appropriate federal facilities by December 31, 2005. Developing and implementing an EMS is required at all Army installations, as well as at all ARNG installations.

The International Organization for Standardization developed the ISO-14001 standard to provide a set of internationally recognized criteria for EMSs. The Army has chosen to use the ISO-14001 standard as a model for implementing EMSs at Army installations. ISO-14001 will facilitate the Army's implementation efforts by providing a common set of requirements, terms, and definitions applicable to the EMS and its various elements.

## 1.3 WHAT IS AN EMS?

An EMS is that part of the overall management system that includes organizational structure, the planning of activities, responsibilities, practices, procedures and processes, and the allocation of resources for developing, implementing, achieving, reviewing, and maintaining the commitments in the environmental policy. Although several recognized EMS frameworks exist, most are based on the ISO-14001 standard. As a result, ISO-14001 is the framework upon which organizations most frequently choose to base their EMS, and this is the trend with U.S. federal facilities. The basic ISO-14001 EMS model (see Figure 1) consists of the following four phases:

### Phase 1: Planning

The organization identifies how its operations might harm the environment, evaluates the consequences of those impacts to the environment and the organization, and establishes appropriate performance objectives.

### Phase 2: Doing

The organization implements the systematic programs to minimize environmental and organizational risk across all levels of its operations.

### Phase 3: Checking

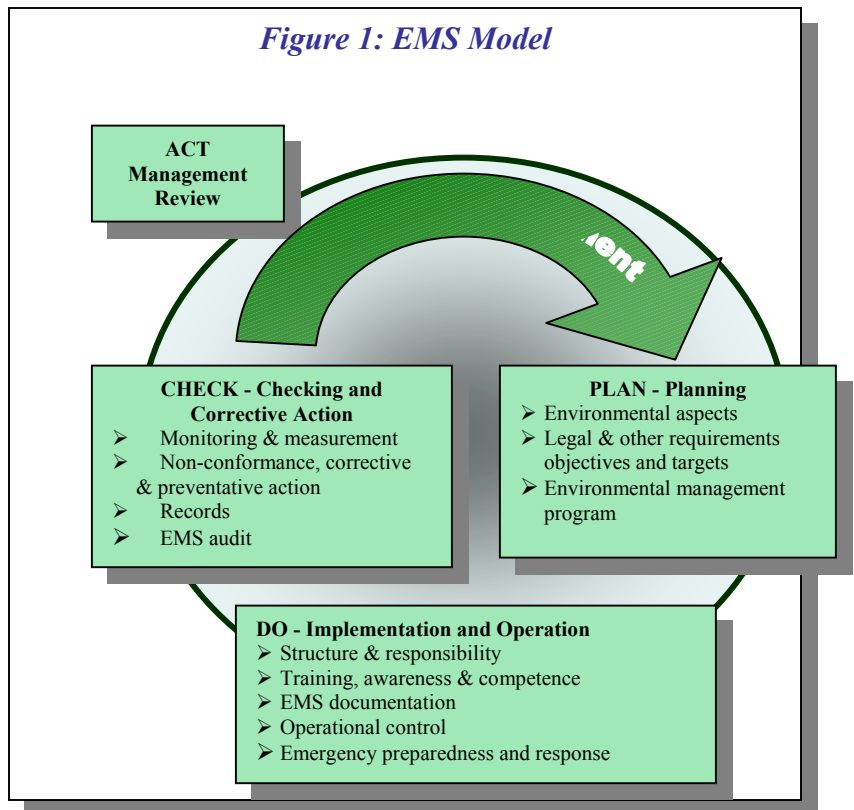
The organization assesses the effectiveness of the programs for minimizing risk and meeting program objectives.

### Phase 4: Acting

Based on its assessment of the implemented systemic measures, the organization undertakes actions to make system adjustments and to promote continual improvement.

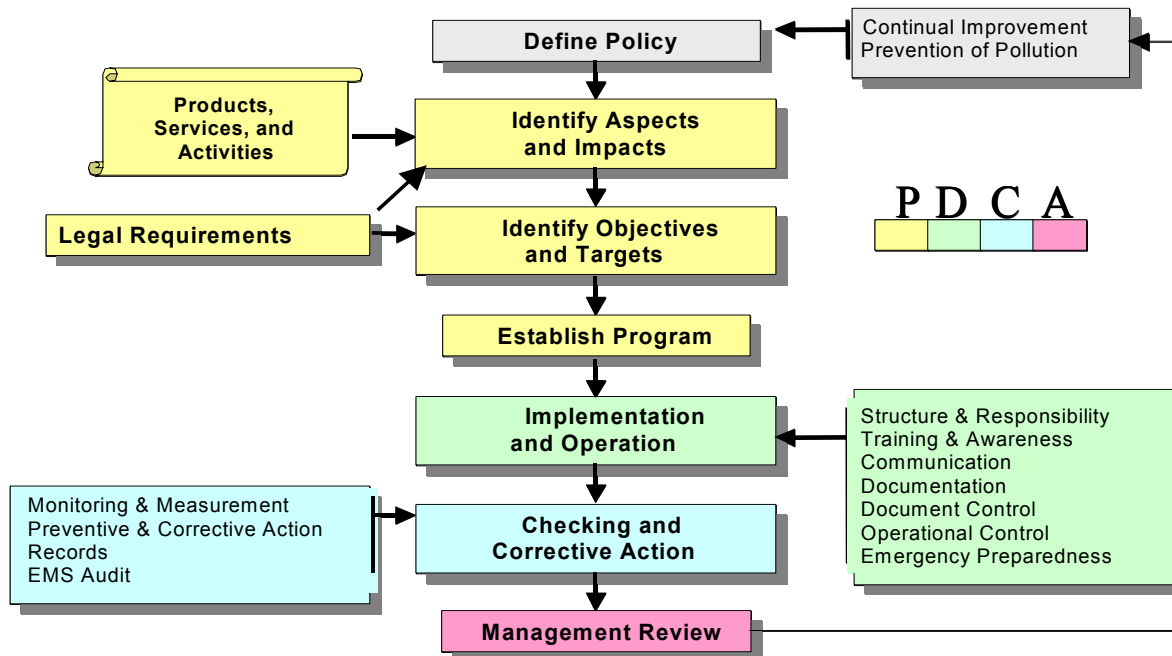
The findings in Phase 4 may indicate that adjustments to existing programs and procedures are necessary, or that entirely new strategies are needed to achieve desired objectives. Output from this phase is fed back into Phase 1, planning, to make necessary changes and additions designed to bring the EMS to the desired level of effectiveness. This system feedback propels the continual improvement of the EMS. The EMS is continually updated through this cycle, fine-tuning its management of operations that harm the environment. This continual improvement cycle is a fundamental attribute of the EMS that allows the system to adapt to the dynamic nature of the organization's operations.

Figure 2 depicts the detailed ISO-14001 EMS process model and highlights the continual improvement loop. The figure is color-coded to correspond with the Plan-Do-Check-Act



(PDCA) cycle previously discussed. It is interesting to note that the word *environmental* does not appear anywhere in the model. This emphasizes that its structure depicts a generic management framework that can be applied to virtually any operation to achieve desired outcomes.

**Figure 2: ISO 14001-EMS Model**



## 1.4 FOCUS ON THE ASPECTS AND IMPACTS COMPONENT OF EMS

The identification of *environmental aspects*<sup>1</sup> and *impacts*<sup>2</sup> is one of the essential components of an ISO-14001 conforming EMS. The identification of *significant environmental aspects*<sup>3</sup> provides the basis for setting objectives and targets and for structuring the environmental management programs, operational controls and other system components that are necessary for the orderly, complete and reliable management of the organization's environmental exposures. By correctly identifying significant aspects, installation leadership will be able to focus resources on managing those aspects that are most likely to lead to training impacts. Traditional compliance-based programs have generally been unable to properly identify and prioritize all such issues on Army ranges. The implementation of an EMS will also help to ensure that range

<sup>1</sup> Environmental Aspect is defined as elements of an organization's activities, products, or services that can interact with the environment.

<sup>2</sup> An Environmental Impact is defined as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products, or services.

<sup>3</sup> A Significant Environmental Aspect is defined as an environmental aspect that has or can have a significant impact to the environment or to the training.

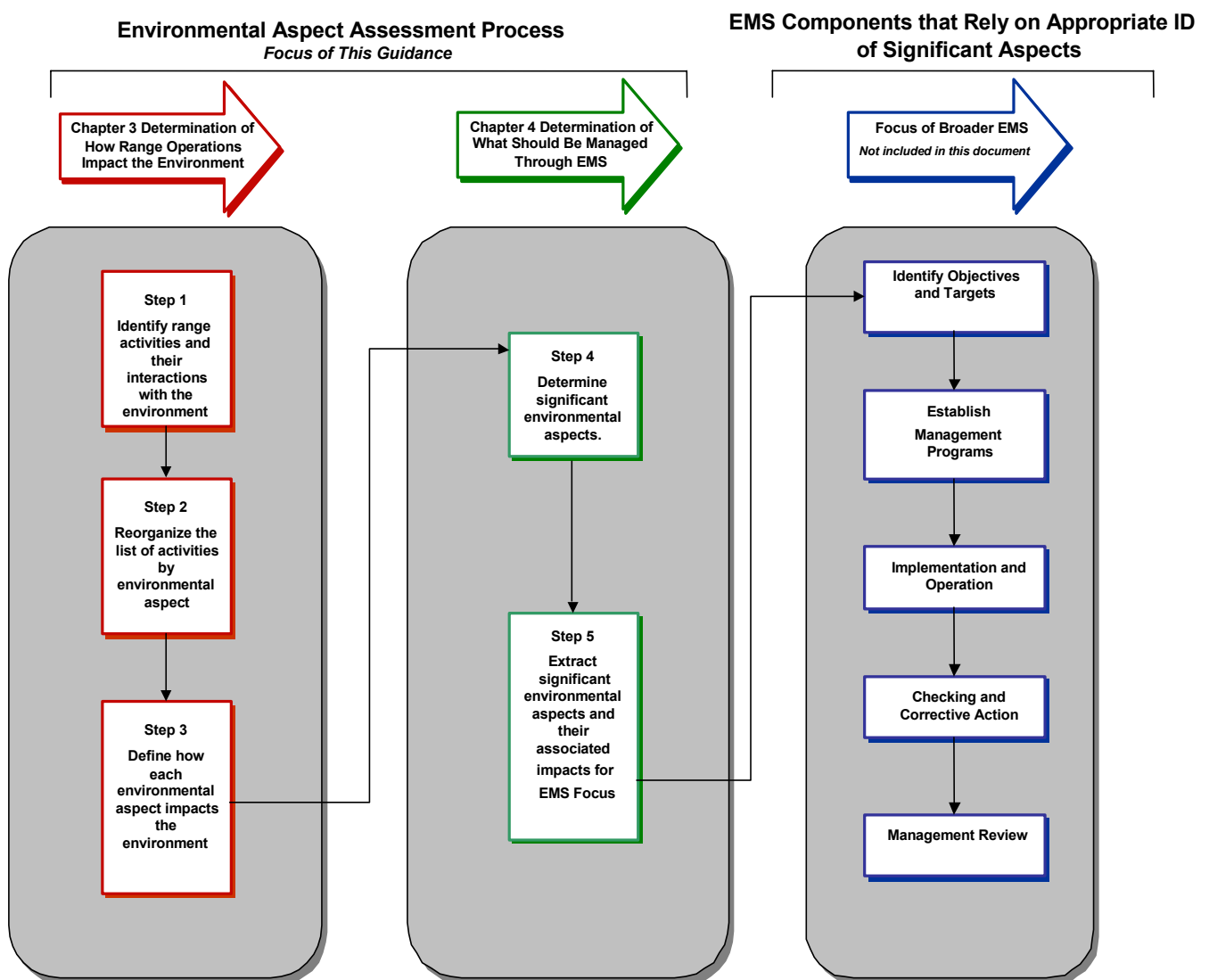


issues are elevated alongside cantonment issues and that they receive the attention they need in terms of management focus and resources.

The impetus for this guide is that aspect and impact analysis has been a challenge for some organizations implementing an EMS. Feedback received from nine installations that participated in an EMS Implementation Pilot Study, conducted in the year 2000, indicated that the aspect and impact analysis was the most difficult component of EMS implementation. These difficulties were due mainly to the fact that methodologies used at the installations varied widely in detail and complexity, and several quickly became unwieldy and ineffective. Installation personnel reported that, “future implementation efforts could be facilitated through the development of a simplified or standardized methodology to identify, score and document environmental aspects and impacts.”

Chapters 3 and 4 of this document detail five major steps necessary to identify significant environmental aspects for range operations. Figure 3 provides an overview of these five steps, along with additional steps necessary to complete the implementation of an EMS. These additional EMS components are heavily dependent on the results of the aspects analysis.

***Figure 3: Major Steps for Identification of Significant Environmental Aspects as a Foundation for Broader EMS Development***



## 1.5 FOCUS ON RANGES

To ensure that it sustains a trained and ready force, the Army is committed to improving the way in which it designs, manages, and uses its ranges. The foundation for this improvement is the strategy contained in the Army Sustainable Range Plan (SRP). The SRP is the roadmap that advances the Army beyond current performance levels for range management. The Army's SRP formally recognizes the potential for EMS to serve one of its principal commitments - integrated management on Army training ranges.

The Army's Environmental Program has generally been effective in addressing environmental concerns within the cantonment area and already has many of the elements of an EMS in place for that purpose. However, the existing environmental compliance focus for range programs has not yet been subjected to the same level of attention. As Figure 4 demonstrates, the Army's Environmental Program is well established with respect to audits, planning documents, permit monitoring, measurement, emergency preparedness / response, training and records, and environmental quality policies. An ongoing challenge is that these program components are sometimes not integrated, and consequently, information may not always be shared between component managers. Another concern is the inability of the traditional compliance approach to identify and document all the significant environmental risks on Army training ranges. The methodology in this guide is designed to redress that deficiency for Army training ranges.

*Figure 4: ISO-14001 and Current Army Systems*



## 1.6 THE EMS CHAMPION AND FORMATION OF THE CROSS-FUNCTIONAL TEAM

Implementing an EMS at a facility as large and diverse as an Army installation requires a tremendous level of leadership emphasis, knowledge, coordination and team building. As such, the EMS Champion is a big factor in the success of EMS implementation. The Garrison Commander appoints the EMS Champion, who is responsible for managing and overseeing the entire EMS implementation effort. The EMS Champion should possess the necessary authority, a good understanding of installation organizations, and the project management and facilitation skills needed to succeed in this role. The EMS Champion coordinates the implementation, manages day-to-day operations, and leads and manages the Cross Functional Team (CFT). Specific responsibilities include:

- Planning and managing EMS implementation;
- Delegating tasks and establishing deadlines;

- Collecting and evaluating work; and
- Arranging training, guidance, and assistance.

In addition to an effective champion, successful implementation of an installation-wide EMS requires support from all functional areas of the installation. An EMS cannot originate and be implemented successfully from the environmental office alone. Coordination of the required support should be accomplished by the formation of an installation-wide CFT. CFT members should include representatives from the environmental office as well as representatives concerned with key installation activities, such as operations and training, ranges, logistics, and acquisition. The Garrison Commander (GC), in conjunction with the EMS coordinator, should also contact various tenants, activities, and units on the installation and invite them to submit potential team members to serve on the CFT. The GC should announce the formation and makeup of the CFT<sup>4</sup>.

The EMS Champion will lead and coordinate the CFT, but cannot conduct the aspect and impact analysis without the CFT. The CFT is invaluable in conducting a comprehensive analysis, as all of the team members will bring unique viewpoints on the issues and concerns facing range operations. Open communication between the CFT members encourages discussion and resolution of relevant issues. Finally, in order to produce a thorough and consistent analysis, it is important that the team's membership remain stable throughout the analysis. Experience has shown that teams with frequent changes in CFT membership, generally develop analyses that are inconsistent, or that lack a proper focus.

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<sup>4</sup> Army EMS Implementation Manual

## CHAPTER 2

# ASPECT AND IMPACT METHODOLOGY OVERVIEW

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This chapter provides an overview of the methodology for identifying the significant environmental aspects of the organization. This methodology is intended to guide the CFT through a systematic determination of significant environmental aspects associated with range use and support operations. To accomplish this, the organization first reviews its operations to determine how they interact with the environment (Appendix A). This interaction is the environmental aspect (Appendix B & C). The interaction between the operation and environment may produce an impact(s) that can be either beneficial or harmful. An evaluation of the impact's potential for harm determines the significance of the environmental aspect. The potential for harm is examined and rated in consideration of the following factors: potential to adversely impact the environment, potential to adversely impact training, the triggering of regulatory requirements, and cause for community concern (Tables 6 – 9). An overall significance score for an environmental aspect is derived from the simple mathematic expression below:

$$\text{Significance Score} = (\text{Likelihood} \times \text{Environmental Impact}) + (\text{Likelihood} \times \text{Training Impact}) + \text{Regulatory Impact} + \text{Community Concern}$$

The overall significance score represents a relative ranking of the environmental aspects. The installation establishes a cutoff score. Those aspects above the cutoff score are labeled significant and are addressed by the installation's EMS.

Two of the factors – environment and training – are given extra prominence in the analysis by weighting their contribution to the overall significance score for a given aspect. This is done by multiplying the impact value for each of these two factors by the likelihood that the impact will occur. Likelihood refers to how often an environmental impact is expected to occur. It incorporates the frequency of the activity, the frequency of the environmental aspect, and the probability that an impact will occur with each repetition of the aspect.

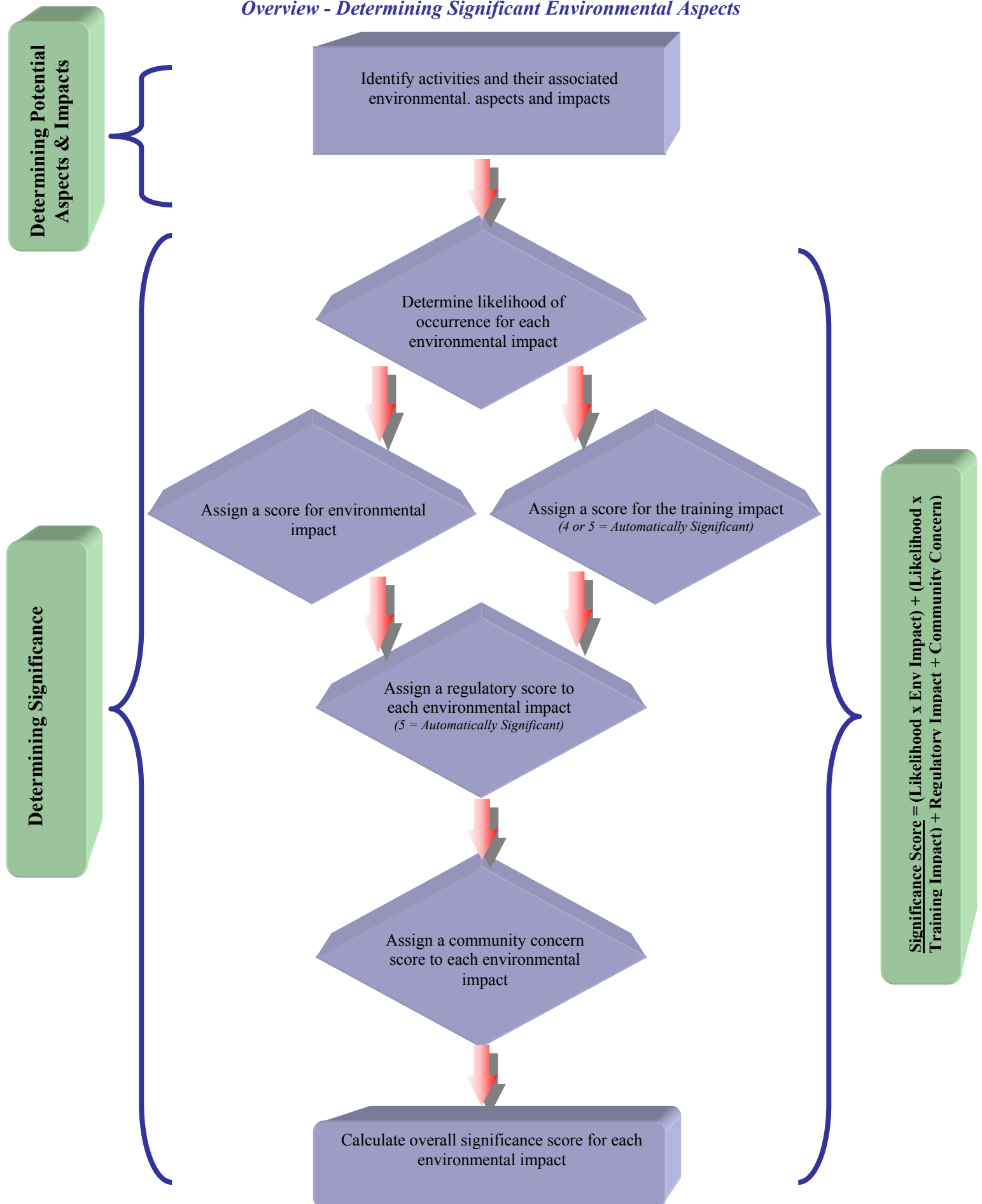
It is important to remember that the EMS is designed to manage the significant environmental aspects as defined by the organization. In addition to the overall impact score, regulatory impact and training impact have an overriding influence on determination of significance. The Army's Environmental Program has a long-standing policy, and will continue to meet its obligations, to satisfy federal, state and local regulatory requirements. Therefore, environmental aspects that trigger regulatory requirements and that have a legal driver are deemed significant. Additionally, this approach to defining significance places an emphasis on the Army's ability to train and the importance of recognizing environmental aspects that adversely impact the training mission. Where a training impact is given a value of 4 or 5 (Table 7), the environmental aspect is considered significant and should be managed by the EMS.

In summary, the three tests below are the criteria for determining significance on Army ranges. If **ANY** of these three criteria are met, the aspect should be considered significant:

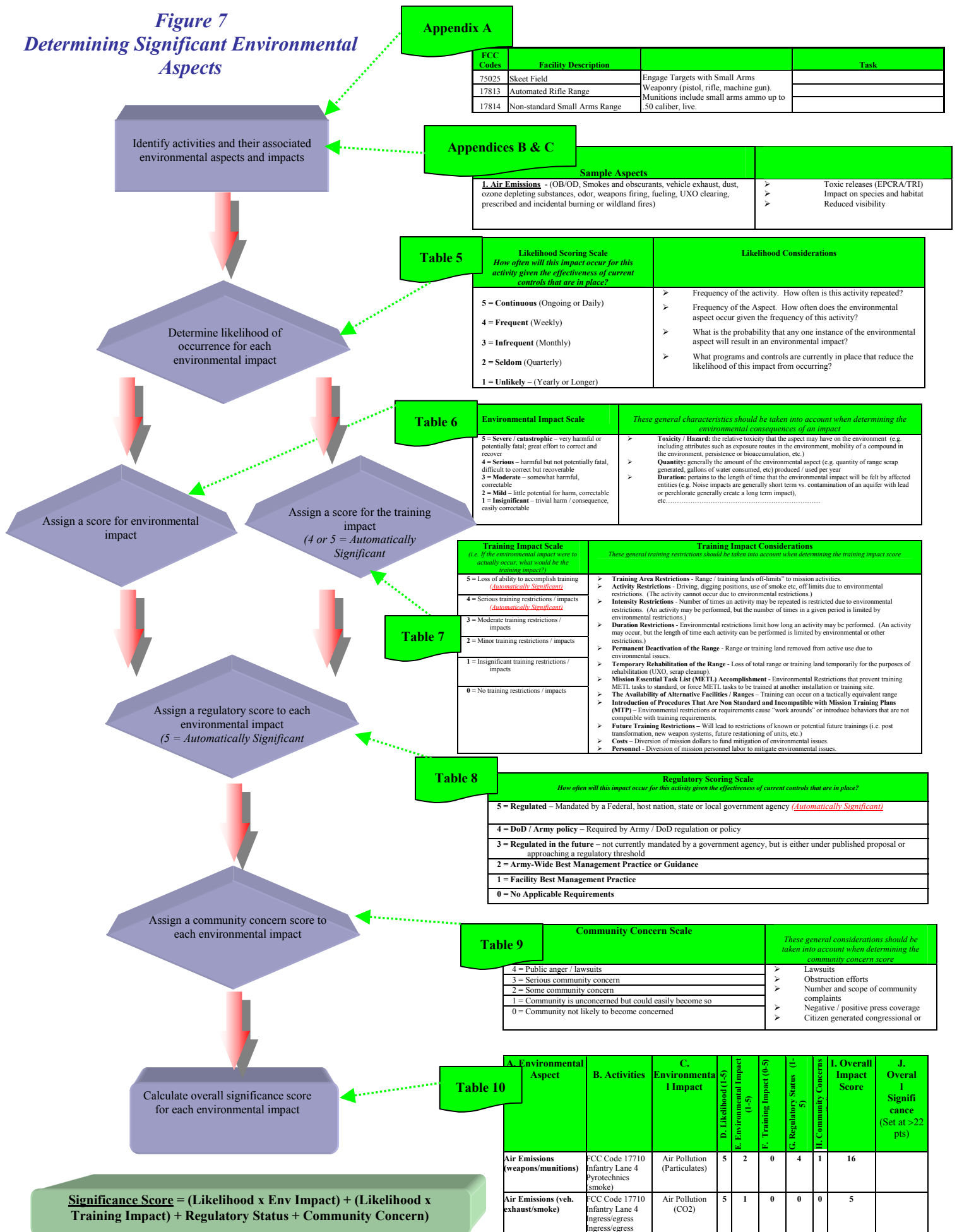
1. Overall Impact Score is greater than an installation determined cutoff (Table 10, column I) – as an example in Table 10, any overall impact score > 22 was considered significant. This value will vary considerably on an installation-by-installation basis.
2. Training Impact Score of “4” or “5” (in Table 10, column F).
3. Regulatory Impact Score of “5” (in Table 10, column G).

Once significant environmental aspects are identified, the other components of the EMS (Figure 1) are developed and implemented to manage those aspects the organization has evaluated as significant. The following flow charts (Figures 6 and 7) illustrate the methodology presented in this guide.

**Figure 6**  
**Overview - Determining Significant Environmental Aspects**



**Figure 7**  
**Determining Significant Environmental Aspects**



It may be useful to review the final product of the analysis up front, before discussing the details of the analysis. This visual should put the scope of the analysis into perspective and provide an overview of the relationships between evaluation criteria. In this document, this final product is [Table 10 – Scoring Environmental Impacts](#) and can be found on page 32. Figure 5 below provides a brief sample of this table. Note that the analysis includes several components that are initially assessed independently, but which must ultimately come together to support a single impact rating. The methodology guides the user through building the individual components of this table. It is these individual components such as likelihood, environmental impact, and training impact that are evaluated in a mathematical model to determine an overall impact score and significance. A complete summary is included on the following page.

**Figure 5**  
**Sample – Scoring Environmental Impacts**

A. Environmental Aspect	B. Activities FCC Code 17868 – Multi Purpose Range	C. Environmental Impact		Impact (1-5)	(0-5)	Impact (0-5)	Concerns (0-4)	I. Overall Impact Score $Sum((DxE) + (DxF) + G + H)$	J. Overall Significance (Set at >22 pts)
Air Emissions (veh. exhaust/smoke)	Ingress/egress	Air pollution (CO2)	5	1	0	0	0	5	
Non hazardous waste generation (range/target scrap)	Management of target scrap on range	Soil contamination	5	3	1	4	0	24	Significant
Spills (POL)	Occupy assembly/AAR area (MKT/GP Med)	Soil contamination	1	1	1	2	0	4	
		Water contamination	2	3	1	3	0	11	
		Improper disposal of waste	1	1	2	3	2	8	
	Fueling operations	Soil contamination	3	2	1	2	0	11	
		Water contamination	2	3	1	3	0	11	
		Improper disposal of waste	1	1	2	3	2	8	
Uncontrolled releases (munitions constituents, UXO to water/soil)	Engage targets/ground fire	Soil contamination	4	3	5 (Sig)	5(Sig)	3	40	Significant
		Water contamination	2	2	1	5(Sig)	0	11	Significant
	Engage targets aerial fire (Helo/A-10)	Soil contamination	3	3	5 (Sig)	5(Sig)	3	32	Significant
		Water contamination	2	2	1	3	0	9	
	UXO clearance/EOD support (targets/road)	Soil contamination	2	2	5 (Sig)	3	3	20	Significant
		Water contamination	1	2	1	3	0	6	
Ecological alteration (vegetation alteration)	Engage targets/ground fire	Habitat disturbance	1	1	0	0	0	1	
	Aerial hovering	Vegetation alteration	2	2	1	2	0	8	



## CHAPTER 3

# DETERMINE HOW RANGE OPERATIONS IMPACT THE ENVIRONMENT

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- Step 1. Identify and list the organization's activities and their environmental aspects.**
- Step 2. Sort the list of activities, products, and services by environmental aspects.**
- Step 3. Identify how each environmental aspect might impact the environment.**

### 3.1 STEP 1: IDENTIFY AND LIST THE ORGANIZATION'S ACTIVITIES AND THEIR ENVIRONMENTAL ASPECTS

Step 1 in implementing an EMS is to identify how the organization interacts with the environment. In EMS language, this is known as *identifying the environmental aspects* of an organization's *activities, products, and services*. These should cover all the possibilities for an organization to influence the environment, both positive and negative. The approach that is typically taken is described in Sections 3.1.1 to 3.1.3. Although ISO-14001 uses the terms *activities, products, and services*, this guidance will use the term *activity* to signify all three. It is also true that activities offer the greatest possibilities for range operations and facilities to influence the environment as they are more prevalent than products or services. Activities may include demolition, maneuver, range construction, or any other operation that occurs on Army training ranges, as well as historical use considerations. Standard activity descriptions have been developed for use in the implementation of this guidance (See [Appendix A](#)). These activity descriptions are aligned closely with the core program areas outlined in the Army Sustainable Range Program Plan. More specific information is provided at section 3.1.1. In this case, it may be necessary (though not mandatory) to further define the activity with tasks and subtasks to facilitate identification of environmental aspects.

#### 3.1.1 Identify those Activities that Interact with the Environment

Activity descriptions have been developed for use in completing this step. To assist in identifying activities, [Appendix A](#) provides a compilation of activities common to Army training

ranges. The activity descriptions in *Appendix A* are organized by range facility groupings (e.g., Small Arms Range, Major Weapons and Collective Ranges, Maneuver/Training Land, etc.). Table 1 provides an example of potential activities identified for one of the groupings (Small Arms Range). Use *Appendix A* while identifying activities specific to your range complex by following the steps below:

- A. Identify a specific range facility on your installation and determine which major grouping in *Appendix A* is most applicable to that range. The major groupings are derived from Department of the Army Pamphlet (DA PAM) 415-28, Guide to Army Real Property Category Codes; the Installation Status Report (ISR) Booklets 1-4; and Army Training and Evaluation Program (ARTEP) documentation.
- B. Identify which sub-grouping in *Appendix A* is applicable for the range facility [e.g., Table 1 – Small Arms (with Fixed Firing Positions)]. These sub-groupings were developed in consideration of the resources listed above, as well as Training Circular 25-8 – Training Ranges. The sub-grouping category was created to further separate the ISR groupings into categories of ranges/facilities with similar activities, which would correspond to similar environmental aspects and impacts. Typical range/facility types (listed by Facility Category Code) for each sub-grouping are also provided to assist the user in choosing the table in *Appendix A* that is most representative of the range/facility being evaluated.
- C. Identify those listed primary activities, ancillary activities, support functions, and natural resource planned management and use activities that are applicable to the range facility being evaluated. Some of these activities are further subdivided into more detailed tasks to assist the EMS team in identifying environmental aspects associated with the activity. These activities and tasks were derived from the resources previously mentioned, as well as TC 25-1, Training Lands and FM 7-15, The Army Universal Task List; Appendix H (Land Rehabilitation and Maintenance (LRAM) Activities) of the Integrated Training Area Management (ITAM) Procedural Manual; and the Training Budget (TBUD) documentation. Based on the level of management and tracking required to support your EMS development, aspects may be identified and linked either at the activity-level (e.g., Table 1 – Fueling Operations) or task-level (e.g., Figure 7 – Ingress/Egress – Mounted Movement). Transcribe the applicable activities/tasks to Table 2 in [Section 3.1.2](#) to further identify environmental aspects.
- D. Identify historical range usages that may contribute to current or future risks to the installation. It is important that these past activities are captured in your overall evaluation, as they can represent a significant exposure for the installation. Some historical range use areas may contribute to environmental impacts, but may not be captured if only active ranges are evaluated. Appendix A includes notes to remind readers to take into account historical range usage in their overall evaluation.
- E. Identify any other activities not provided in [Appendix A](#). Ensure that all activities on the range complex are captured, including those outside of the active range boundaries. The areas between active ranges often include activities such as

maintenance of closed and inactive ranges, maintenance of road infrastructure, etc. Transcribe these activities/tasks to Table 2 in [Section 3.1.2](#) to further identify environmental aspects.

Additional resources for identifying range activities and their respective environmental aspects include the Range Facilities Management Information System, Technical Manuals and Field Manuals specific to the units and/or Military Operational Specialties performing the mission.

*Table 1. Example from Appendix A – Small Arms (with Fixed Firing Positions)*

ISR Grouping: Small Arms Ranges			
ISR Sub-Grouping: Small Arms [With Fixed Firing Positions]			
Description: Any of a number of outdoor ranges used for practice and qualification in engaging targets with small arms weaponry from fixed firing positions.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
75025	Skeet Field	Engage Targets with Small Arms Weaponry (pistol, rifle, machine gun). Munitions include small arms ammo up to .50 caliber, live.	
17813	Automated Rifle Range		
17814	Non-standard Small Arms Range		
17801	Basic 10M-25M Range (Zero)		
17802	Non-Automated Field-Fire Range		
17803	Automated Field-Fire Range		
17804	Non-automated Record-Fire Range		
17805	Automated Record-Fire Range		
17831	Machine Gun Transition Range		
17832	Machine Gun Field-Fire Range		
17833	Automated Multipurpose Machine Gun Range		
17893	Squad Defense Range		
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	

		Support Functions	Tasks
		Fire Control Activities	Mowing
			Fire Breaks
		Scheduling	
		Erosion Control	Structures/Systems
			Soil Rehabilitation
			Land/Soil Stabilization
		Natural Resources Management and Use	Tasks
		Recreational Activities	
		Forestry Management	Conduct Harvest
			Shelter Cut (Wood)
			Clear Impact
			Controlled Burning
		Species Management	Fencing/Barriers
			Manage Protection Zone
			Manage Habitat
		Cultural Resource Management	Fencing/Barriers
			Digging

*Table 1. (Continued)*

*Appendix A* is not intended to provide a complete listing of activities associated with range operations. The EMS team may add and/or delete from the activities and tasks provided in *Appendix A*, as necessary. Three simple steps to assist the EMS team in identifying relevant range activities are provided below:

- A. Review and become acquainted with the list of activities in *Appendix A*. This is a good starting point towards development of an inventory of your installation range specific activities.
- B. Add to or modify the list by answering the question, *which of our current or past activities have the potential to interact with the environment*. The EMS team may ask other parties that the team believes can contribute, such as employees or management, to help with this step.
- C. Record listed activities in a table fashioned like that shown as Table 2 “Training Range Activities and the Associated Aspects”.

### 3.1.2 Identify Environmental Aspects Associated with Range Activities

The EMS team should continue to develop Table 2 by adding a second column to contain the environmental aspects associated with the activities. Environmental aspects are the elements of an organization’s activities that can interact with the environment. An environmental aspect signifies the possibility for an environmental impact, whether good or bad.

**Table 2. Training Range Activities and the Associated Aspects.**

A. Activities	B. Environmental Aspects
<b>1. FCC Code 17710 Infantry Lane 4</b> (Engage targets/ground fire)	<ul style="list-style-type: none"><li>➤ Ecological alteration (vegetation alteration)</li><li>➤ Ecological alteration (hydrological alteration)</li><li>➤ Ecological alteration (T&amp;E species)</li><li>➤ Soil alteration</li><li>➤ Air emissions (veh. exhaust/smoke)</li><li>➤ Non hazardous waste generation (range/target scrap)</li><li>➤ Spills (POL)</li><li>➤ Air emissions (weapons/munitions)</li><li>➤ Uncontrolled releases (munitions constituents, UXO to water/soil)</li></ul>
<b>3. FCC Code 17868 Multi-Purpose Fire Range 24</b> (Engage targets aerial fire (helo/A-10))	<ul style="list-style-type: none"><li>➤ Ecological alteration (T&amp;E species)</li><li>➤ Ecological alteration (vegetation alteration)</li><li>➤ Uncontrolled releases (munitions constituents, UXO to water/soil)</li><li>➤ Spills (POL)</li><li>➤ Soil alteration</li><li>➤ Ecological alteration (hydrological alteration)</li><li>➤ Air emissions (weapons/munitions)</li></ul>

**Tools**

To enable manipulation of the data, it may be useful to use a database (i.e., MS Access) for the lists/tables described in these steps. Some installations may purchase specific EMS software.

**Environmental Aspect**

"Any element of an organization's activities, products, or services that can interact with the environment"

—ISO-14001, 1996

**Want to Know More?**

There are several methods such as brainstorming that can be useful in identifying environmental aspects related to activities, products, and services. These are described in Section 2.1.3.1.

Note that this is a sample table and most Army training ranges

*Note that this is a sample table and most Army training ranges will have many additional activities and aspects.*

### 3.1.3 Steps to Identify Environmental Aspects

There are four common approaches that organizations use to identify the environmental aspects of their current or past activities and determine the conceivable risks its operations may pose to the environment. These four approaches are discussed below. It is often useful to use these approaches in combination with one another to ensure that all activities are adequately covered and all environmental aspects are identified. The result is a table that lists an organization's activities, and the environmental aspects that are associated with them (see Table 2). To assist with the identification of aspects, [Appendix B](#) provides a listing of common aspects found in Army training ranges.

The following are common environmental aspects identification approaches:

- Brainstorming
- Physical walk-through
- Employee input
- Review of existing/historical planning documents

It is highly recommended that all four approaches be used in a complementary fashion when completing the aspects analysis for a particular range. Each has unique strengths that will contribute to the success of the analysis.

#### 3.1.3.1 BRAINSTORMING

In most cases, the range management team and other knowledgeable individuals will participate in the brainstorming session. Brainstorming is expeditious and effective when participants have a detailed understanding of the range's activities and their associated environmental aspects.

Participants typically reflect on the range's operations and brainstorm on the likely sources of environmental aspects. These operations include construction, demolition, operations, and maintenance. Construction refers to all the inputs and activities that go into the construction of a range. This includes materials, substances, fuel and electrical energy, human resources, and intellectual resources (e.g., plans, designs, drawings, and blueprints). Demolition is similar to construction (in reverse) and considers the same elements as in construction. Operations include everything that takes place on the range relative to mission readiness. Maintenance considers all activities, materials, supplies, and equipment that are used for maintenance of the range. These are four major categories of activities that should be considered when brainstorming for environmental aspects. There may be others (e.g., logging) that will also require consideration of environmental impacts. Brainstorming is routinely complemented with another approach, such as the physical walk-through.

### 3.1.3.2 PHYSICAL WALK-THROUGH

It is recommended that a team of experts conduct a walk-through of all areas and operations of the range to serve as a visual trigger to ensure all sources of environmental aspects are included in the analysis. The walk-through should be well organized so that all areas and operations are inspected and properly considered. This effort requires sufficient time to allow a thorough and complete coverage of all areas and activities on the range.

### 3.1.3.3 EMPLOYEE INPUT

Individuals that are likely to be the most familiar with a particular range are the employees who are assigned to that range. It can be particularly productive to engage employees in the process of identifying those activities that involve environmental aspects. An added benefit of soliciting employee input is that it begins the process of raising their awareness, involvement, and eventually, ownership of practices that avoid waste and environmental degradation.

To be useful, employee input needs to be structured and channeled, enabling the information to be properly evaluated and integrated into the EMS. Employee input can be captured effectively by using a questionnaire or survey. Examples of appropriate questions to ask on a questionnaire are as follows:

- Do the activities on this range include:
  - Water wells for remote sites?
  - Water systems distributing water to remote sites?
  - Septic systems?
  - Waste discharge to pits that are deeper than they are wide?
  - Vulnerable sources of drinking water associated with the range?
  - Target preparation and target residue management?
  - Product storage in USTs for equipment such as vehicles and generators?
  - Discarding of trash?
  - Vehicle maintenance?
  - Range residue management and turn in?
  - Range clearance and maintenance?
  - Open burn (OB) / open detonation (OD) treatment?
  - Vegetative control?
  - Smoke generators?
  - Fugitive dust from vehicle movement?
  - Land clearing for range construction, roads and target preparation?
  - Bullet poppers?
  - Pesticide / herbicide application?
  - Construction, demolition and renovation of buildings?
  - Emergency detonations?
- Do any other conditions or attributes of an employee's job function/activity pose a risk to the environment?
- Does historical usages of the area constitute a current or future risk to the environment?



### 3.1.3.4 REVIEW EXISTING/HISTORICAL PLANNING DOCUMENTS

Most installations have extensive environmental planning documentation in place. Although some documentation does not cover range activities, others such as Integrated Natural Resource Plans, Integrated Cultural Resource Management Plans, and Solid Waste Management Plans often include site-specific information regarding the specific environmental issues and regulatory requirements associated with range activities. Historical planning documents and records can also help in identifying those range facilities or complexes whose historical use may contribute to current or future risk to the installation. These documents should be reviewed for information to assist in the aspect and impact analysis.

### 3.1.4 Determining Activities And Aspects that can be Evaluated Collectively

In conducting this analysis, it becomes apparent that some activities of range management occur not just in the geographic area encompassed by a single range, but rather are conducted consistently at the programmatic level across all ranges or even at the installation level. In these instances, it is possible to evaluate activities collectively. By evaluating an activity only once, installations will minimize the amount of duplicative work being performed for each individual range, while ensuring that the activities that are not controlled at the individual range level are consistently accounted for in the overall management strategy.

Examples of *activities* that may be candidates for collective evaluation include:

- Forestry management;
- Spill management;
- Agriculture outleasing management; and
- Pesticide management.

The last table in *Appendix A* provides additional examples of activities that may be suitable for collective evaluation. Activities that should be evaluated collectively should not be confused with aspects that will need to be considered due to the cumulative nature of the impact. [Section 4.1.8](#) addresses why some impacts may need to be considered cumulatively.

Clearly, the collective evaluation of activities leads to the possibility to fashion common approaches to common environmental aspects. Common aspects that may originate in similar or dissimilar activities may also be considered collectively. Good candidates for collective evaluation are those where the programs that control the aspect are standardized across the entire installation and are not range or site specific (e.g., air emissions of ODCs are generally managed in a consistent manner across the entire installation). Others may include aspects where the geographic scale of the impact (environmental receptors) is not unique to a particular range (e.g., energy consumption leads to a global impact and would not be managed separately at each individual range).

Examples of aspects that may be candidates for collective evaluation include:

- Air emissions – ozone depleting substances;
- Energy consumption and conservation; and

- Natural resource and raw material consumption or conservation.

### 3.1.5 Aspect Controllability

ISO-14001 contains a qualifying statement that an organization only has to identify those aspects that it *can control and over which it can be expected to have influence*.<sup>5</sup> This implies that an organization has varying levels of control over its activities. While some issues cannot be controlled at the installation level, they can be controlled or influenced by the Army as a whole. For example, installation range personnel are not able to change the constituents of 5.56 mm ammunition and their potential migration into the soil. However, the Army as a whole can influence this aspect through promulgating technologies such as green ammunition, bullet traps, and target technology. For this reason, installations should **capture all aspects** regardless of the controllability at their level. In this manner, these aspects are managed by passing along the installation requirements to higher headquarters for their consideration. Programs such as the Army's Environmental Quality Technology (EQT) program can leverage these requirements when setting priorities for range technology needs and when planning future technology research and development. Also, headquarters acquisition programs can benefit from this information by better understanding the full life cycle environmental costs of weapons systems. This understanding can eventually translate to sustainable acquisitions that reduce environmental impacts.

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<sup>5</sup> ISO 14001: 1996, Environmental Management Systems- Specification with guidance for use

## 3.2 STEP 2: SORT THE LIST OF ACTIVITIES BY ENVIRONMENTAL ASPECT

Environmental aspects form the foundation of an EMS and provide a focus point for the EMS to address. Sorting by aspect makes the environmental aspects the reference point for subsequent implementation steps. Step 2 includes restructuring Table 2 so that it is organized by *environmental aspect* rather than by activity. In Step 2, each aspect is listed once, with all of the associated activities that can cause it to occur. This process is best understood by working through the example described in the procedure below.

- List all environmental aspects that were identified in Step 1 in column A of the table, as shown in Table 3.
- List all activities related to a given environmental aspect in *column B*.

**Table 3. Reorganized Table with Aspects as the Focus Point**

A. Environmental Aspect	B. Activities FCC Code 17868 – Multi Purpose Range
Air Emissions (weapons/munitions)	Use of pyrotechnics (smoke)
	Engage targets/ground fire
	Engage targets aerial fire (A-10, CAS)
Air Emissions (veh. exhaust/smoke)	Ingress/egress
Non hazardous waste generation (range/target scrap)	Management of target scrap on range
Spills (POL)	Occupy assembly/AAR area (MKT/GP Med)
	Fueling operations
Uncontrolled releases (munitions constituents, UXO to water/soil)	Engage targets/ground fire
	Engage targets aerial fire (Helo/A-10)
	Clearance/EOD support (targets/road)
Ecological alteration (vegetation alteration)	Engage targets/ground fire
	Aerial hovering
Ecological alteration (hydrological alteration)	Maintain stream crossing
Soil alteration	Vehicle maneuver (track/wheels)
	Occupy assembly/AAR area (MKT/GP Med)
	Engage targets/ground fire
Ecological alteration (T&E species)	Engage targets/ground fire
	Engage targets/ground fire

### 3.3 STEP 3: IDENTIFY HOW EACH ENVIRONMENTAL ASPECT MIGHT IMPACT THE ENVIRONMENT.

Step 3 involves identifying the potential impacts of an environmental aspect if it were to occur. In EMS language, these are known as the *potential environmental impacts* of an environmental aspect. A *potential environmental impact* of an aspect is evaluated by its likelihood of occurrence and its likely consequences. After the potential environmental impacts have been identified, their description should be recorded alongside the activity and aspect with which they are associated. To assist with the identification of potential impacts, [Appendix B](#) includes a listing of common aspects and impacts found on Army ranges. [Appendix C](#) can also assist as it includes common environmental issues identified by the Range Sustainability Integration Group.

**Table 4. Identification of Environmental Impacts**

A. Environmental Aspect	B. Activities FCC Code 17868 – Multi Purpose Range	C. Environmental Impact
Air Emissions (weapons/munitions)	Use of pyrotechnics (smoke)	Air pollution (particulates)
	Engage targets/ground fire	Air pollution (toxics)
	Engage targets aerial fire (A-10, CAS)	Air pollution (toxics)
Air Emissions (veh. exhaust/smoke)	Ingress/egress	Air pollution (CO2)
Non hazardous waste generation (range/target scrap)	Management of target scrap on range	Soil contamination
Spills (POL)	Occupy assembly/AAR area (MKT/GP Med)	Soil contamination
		Water contamination
	Fueling operations	Improper disposal of waste
		Soil contamination
		Water contamination
Uncontrolled releases (munitions constituents, UXO to water/soil)	Engage targets/ground fire	Improper disposal of waste
	Engage targets aerial fire (Helo/A-10)	Soil contamination
		Water contamination
	UXO clearance/EOD support (targets/road)	Soil contamination
		Water contamination
Ecological alteration (vegetation alteration)	Engage targets/ground fire	Habitat disturbance
	Aerial hovering	Vegetation alteration
Ecological alteration (hydrological alteration)	Maintain stream crossing	Water contamination (sediment)
		Disturbance to species
		Stormwater reduction (stream buffer)
Soil alteration	Vehicle maneuver (track/wheels)	Sediment loading to streams
	Occupy assembly/AAR area (MKT/GP Med)	Erosion
	Engage targets/ground fire	Sediment loading to streams
		Erosion
		Sediment loading to streams
Ecological alteration (T&E species)	Engage targets/ground fire	Disturbance to species
	Engage targets/ground fire	Disturbance to species

#### Environmental Impact

"Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities products or services"  
—ISO 14001, 1996

### 3.3.1 Approach to Identifying Environmental Impacts

Potential environmental impacts should be qualified when possible to facilitate the determination of significance. In general, the significance of a potential impact to the environment is determined by the likelihood of occurrence and the consequences if it does occur. The entry in column C should be as descriptive as possible; instead of simply listing a potential spill impact as *soil contamination*, it would be more useful to describe the impact as *soil contamination – diesel fuel*. This description will facilitate the proper determination of the impacts and significance.

### 3.3.2 Documenting Positive Impacts

The ISO standard defines an environmental impact as *any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services*.<sup>6</sup> Although the aspect and impact analysis is inherently geared towards identifying risks (essentially the degree of negative impacts), it should also attempt to identify those positive impacts to the environment that are a result of existing programs or activities. Positive impacts should be identified because the aspects that create them may be incorporated into environmental management programs and systematically managed. The need to manage positive environmental impacts depends on whether they are outcomes of proactive programs instituted to achieve those outcomes or whether they are ancillary outcomes of other on-going activities. Proactive programs should continue to be managed as originally intended.

For example, an installation voluntarily may decide to let a 50 ft buffer strip grow alongside a stream. This action can have positive impacts on the environment such as reduced storm-water flow, sediment loading, etc. This is a proactive program and may need on-going management to maintain the buffer strip. Other activities such as controlled burning may have both negative (air pollution) and positive impacts (improved wildlife habitat). If this is the case, both impacts should be identified. The burns may create positive impacts, but these need not be managed per se independent of the planned burns. There is no need to attempt to score positive impacts. Positive impacts can be made visible in Table 10 by entering the word *positive* in each of the scoring boxes. This will ensure that when the analysis is complete, those activities that have positive impacts can be readily identified, and included in future environmental management programs, if they need to be managed.

When characterizing impacts as *positive*, it is important that the impact actually improves the environment, and is not just the minimization of a negative impact. For example, cleaning up a site where the installation has contaminated the soil is not a positive impact, it is simply remediating a negative (contamination). Recycling paper is also not a positive impact as it simply represents the lessening of a negative (solid waste disposal). A leading author on the subject of sustainability summed up this concept properly by asking “*is doing less bad, doing good, or is it just doing less bad?*”<sup>7</sup> This question serves as a useful reality check for those impacts that are originally thought to be positive.

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<sup>6</sup> ISO 14001: 1996, Environmental Management Systems- Specification with guidance for use.

<sup>7</sup> McDonough, William and Michael Braungart. *Cradle to Cradle*, 2002.

# CHAPTER 4

## DETERMINE WHICH ASPECTS SHOULD BE MANAGED THROUGH EMS

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**Step 4. Identify all significant environmental aspects.**

**Step 5. Extract significant environmental aspects and their associated impacts for EMS Focus.**

### 4.1 STEP 4: IDENTIFY ALL SIGNIFICANT ENVIRONMENTAL ASPECTS.

Interestingly, the authors of ISO-14001 provide no insight on their perception of significance. As such, the term is used in a subjective manner. It is ultimately up to installation personnel to determine what constitutes significance. This step provides criteria for significance that are mission-focused and applicable to Army range operations.

A number of factors influence whether an *environmental aspect* is a *significant environmental aspect*. To identify the organization's significant environmental aspects, these factors must be considered systematically and appropriately to support the organization's environmental policy and mission priorities, and to protect the environment. Considerations for determination of significant aspects include:

- Likelihood of Occurrence of Impact;
- Environmental Impacts;
- Training Impacts;
- Regulatory Impacts; and
- Community Concerns.

#### **Significant Aspect**

*An aspect is designated "significant" when it is determined to have a significant potential impact to the environment or to the organization. The significant aspects should be considered when establishing objectives and targets.*

### 4.1.1 Criteria for Scoring Likelihood of Occurrence of Impact

When evaluating potential impacts, the first thing to assess is the likelihood that the impact will actually occur given the programs and controls that are in place to prevent it from occurring. The greater the likelihood, the greater any additional efforts should be to prevent the occurrence. Likelihood of an impact is dependent on: the frequency of the activity, the frequency of the environmental aspect for that activity, and the probability that the impact will occur for a given occurrence of the aspect given the programs and controls that are in place. The likelihood factor will be multiplied by the environmental and by the training impact factors to calculate relative significance values for those two impact types.

The likelihood factor will subsequently be used in this guide to weigh both the environmental and training impacts. Both the environmental and training impacts are multiplied by the likelihood that the impact will actually occur given the current effectiveness of existing controls. Existing programs and controls are taken into account so that likelihood reflects the fact that those controls will intervene to reduce the likelihood that the impact will occur. Likelihood reflects the existing situation at a given point in time. As an example, if the activity of refueling vehicles leads to frequent spills that result in an environmental impact approximately once per month, the scoring scale shown in Table 5 suggests a factor of 3. It is important that experienced facility personnel be involved in making likelihood determinations. First-hand knowledge is invaluable in determining the likelihood of an impact occurring.

**The question that should be asked when applying the criteria in Table 5 is:** *How often will this impact occur for this activity given the effectiveness of current controls and management programs that are in place?* The scale value selected from Table 5 should be entered into column D of [Table 10](#).

**Table 5. Scoring the Likelihood of Occurrence of Impact**

Scoring Scale	Likelihood Considerations
<b>5 = Continuous</b> (Ongoing or Daily) <b>4 = Frequent</b> (Weekly) <b>3 = Infrequent</b> (Monthly) <b>2 = Seldom</b> (Quarterly) <b>1 = Unlikely</b> (Yearly or Longer)	<ul style="list-style-type: none"><li>➤ Frequency of the activity. How often is this activity repeated?</li><li>➤ Frequency of the Aspect. How often does the environmental aspect occur given the frequency of this activity?</li><li>➤ What is the probability that any one instance of the environmental aspect will result in an environmental impact?</li><li>➤ What programs and controls are currently in place that reduce the likelihood of this impact from occurring?</li></ul>



## 4.1.2 Criteria for Scoring Environmental Impacts of Aspects

Once the likelihood of an environmental impact is determined, the next step is to determine the relative degree of severity if it were to actually occur. Protecting the environment from this impact is the overarching purpose of the EMS. The environmental impact factor is to be selected by the implementation team using its own experience and expertise. Table 6 provides an approach that can be used to determine the degree of severity of the environmental impact. The second column of Table 6 provides a few common characteristics that should be taken into account when making this determination. The importance that is placed on these various characteristics is dependent on installation conditions and priorities. The existence of mitigating programs or controls should be taken into account in gauging the likely impacts.

**The questions that should be asked when applying the criteria in Table 6 are:** *If the impact occurs, what will be the probable environmental impact, given existing programs and controls, from among those listed in Table 6? Which severity factor listed in the left column of Table 6 best characterizes the magnitude of these consequences?* The selected value from Table 6 should be transferred to Column E of Table 10.

**Table 6. Criteria for Scoring Environmental Impacts on Army Ranges**

<b>Environmental Impact Scale</b> <i>(i.e. If the impact were to actually occur, what would be the severity?)</i>	<b>Environmental Impact Considerations</b> <i>These general characteristics should be taken into account when determining environmental impact</i>
<b>5 = Severe / catastrophic</b> – very harmful or potentially fatal; great effort to correct and recover  <b>4 = Serious</b> – harmful but not potentially fatal, difficult to correct but recoverable  <b>3 = Moderate</b> – somewhat harmful, correctable  <b>2 = Mild</b> – little potential for harm  <b>1 = Insignificant</b> – trivial harm / consequence	<ul style="list-style-type: none"> <li>➤ <b>Hazard:</b> The relative hazard that the impact may have on the environment (e.g. including attributes such as toxicity, exposure routes in the environment, mobility of a compound in the environment, persistence or bioaccumulation, etc.).</li> <li>➤ <b>Quantity:</b> Generally the amount of the agent causing the impact (e.g. quantity of pollutant emitted, gallons of water consumed, etc.).</li> <li>➤ <b>Duration:</b> Pertains to the length of time that the environmental impact will be felt by affected entities (e.g. Noise impacts are generally short term while contamination of an aquifer with lead or perchlorate generally creates a long term impact).</li> <li>➤ <b>Geographic Boundaries:</b> Reflects the size of the physical area in which the impact occurs (e.g. a 10 gallon diesel spill may affect a few cubic feet of soil while contamination of a local river with sediment or pollutants may impact the ecosystem of an entire watershed).</li> <li>➤ <b>Proximity of impact to people or sensitive environmental receptors or targets:</b> consider the closeness of the impact to sensitive environmental receptors such as those listed below:             <ul style="list-style-type: none"> <li>○ <b>Cultural resources:</b> Threatens (i.e., mild or moderate), disturbs / damages (i.e., serious) or destroys (i.e., severe) historic properties, cultural landscapes, cultural items, archeological resources, Indian sacred sites, cemeteries, etc.</li> <li>○ <b>Natural / ecological resources:</b> Threatens (i.e., mild or moderate), alters (i.e., moderate or serious) or destroys (i.e., severe) sensitive natural and ecological resources such as wetlands, threatened &amp; endangered species, critical habitats, sole source aquifers, etc.</li> <li>○ <b>People:</b> Poses acute (i.e., severe), chronic (i.e., serious or moderate), or temporary (i.e., mild or insignificant) risks to human health because of the impact's proximity to schools, public stakeholders, troops, hospitals, housing, recreational areas, drinking water, etc.</li> </ul> </li> </ul>



### 4.1.3 Criteria for Scoring Training Impacts

The EMS recognizes that an environmental impact may have ramifications for the environment and for the installation's mission. Under certain circumstances, an environmental impact has serious consequences for the installation itself. For example, a large environmental incident may result in a disruption to operations because the local community is upset or the licenses or permits essential for the installation's mission are revoked. It is therefore prudent to manage all environmental aspects that may have a significant impact on the ability to train, even in those cases where the potential environmental impact from them may be modest or insignificant. Although not a requirement of ISO-14001, this consideration will help ensure that the Army's EMS is mission-focused and that it prioritizes not only on the basis of environmental impact, but also on the basis of impact to the Army's ability to train soldiers.

Army training principles outlined in Army Field Manual (FM) 7-0 (25-100) include the concept of training soldiers as they would fight. Conversely, soldiers fight as they have been trained. Soldiers remember the last way they performed a task (right or wrong) and intuitively perform those tasks in combat as they have been trained. To ensure success in combat, soldiers and units must perform to established standards, which in turn must be rigidly enforced by leaders. Soldiers have no time to learn non-standard procedures. Their units, therefore, must train by performing tasks to the standards specified in the Military Training Plan (MTPs), ARTEPS and other training / doctrinal publications. Given the importance of these training principles, it is essential that environmental restrictions that impair a unit's ability to train to a specified standard be taken into account in this analysis. Training restrictions can take on many forms; therefore, it is important that all of the considerations listed in Table 7 be taken into account when determining the severity of training impacts. The proper assessment of training impacts will ensure that the EMS is implemented in a mission focused manner.

Table 7 provides an approach tailored towards range activities that can be used to determine the level of training impact. Due to the importance of and need to mitigate training impacts, this methodology designates any impact with a score of 4 or 5 (Table 10, column F), as automatically significant. In addition, the second column of Table 7 provides common training impacts associated with Army ranges. Although this table provides common range restrictions and is aimed at assisting range operators in objectively and consistently scoring training impacts, it is recommended that installation Deputy for Plans, Training & Mobilization (DPT-M) personnel provide input when using it. It is important to recognize that evaluating training impacts is not an all or nothing issue. In other words, the evaluation should take into account gradations of training impacts. The scale in the left column of Table 7 provides the appropriate criteria for this evaluation.

The questions that should be asked when applying the criteria in Table 7 are: *If this environmental impact actually occurred, what would be the probable training impacts from among those listed in Table 7? Which severity category listed in the left column of Table 7 best characterizes the magnitude of these consequences?* The selected value from Table 7 should be transferred to Column F of Table 10.

**Table 7. Criteria for Scoring Training Impact on Army Training Ranges**

<b>Training Impact Scale</b> <i>(i.e. If the environmental impact were to actually occur, what would be the training impact?)</i>	<b>Training Impact Considerations</b> <i>These general training restrictions should be taken into account when determining the training impact score.</i>
<b>5</b> = Loss of ability to accomplish training <i>(Automatically Significant)</i>	<ul style="list-style-type: none"> <li>➤ <b>Training Area Restrictions</b> - Range / training lands off-limits to training activities.</li> <li>➤ <b>Activity Restrictions</b> - Driving, digging positions, use of smoke etc, off limits due to environmental restrictions. (The activity cannot occur due to environmental restrictions.)</li> </ul>
<b>4</b> = Serious training restrictions / impacts <i>(Automatically Significant)</i>	<ul style="list-style-type: none"> <li>➤ <b>Intensity Restrictions</b> - Number of times an activity may be repeated is restricted due to environmental restrictions. (An activity may be performed, but the number of times in a given period is limited by environmental restrictions.)</li> <li>➤ <b>Duration Restrictions</b> - Environmental restrictions limit how long an activity may be performed. (An activity may occur, but the length of time each activity can be performed is limited by environmental or other restrictions.)</li> </ul>
<b>3</b> = Moderate training restrictions / impacts	
<b>2</b> = Minor training restrictions / impacts	<ul style="list-style-type: none"> <li>➤ <b>Permanent Deactivation of the Range</b> - Range or training land removed from active use due to environmental issues.</li> </ul>
<b>1</b> = Insignificant training restrictions / impacts	<ul style="list-style-type: none"> <li>➤ <b>Temporary Rehabilitation of the Range</b> - Loss of total range or training land temporarily for the purposes of rehabilitation (UXO, scrap cleanup).</li> </ul>
<b>0</b> = No training restrictions / impacts	<ul style="list-style-type: none"> <li>➤ <b>Mission Essential Task List (METL) Accomplishment</b> - Environmental Restrictions that prevent training METL tasks to standard, or force METL tasks to be trained at another installation or training site.</li> <li>➤ <b>The Availability of Alternative Facilities / Ranges</b> – Training can occur on a tactically equivalent range</li> <li>➤ <b>Introduction of Procedures That Are Non Standard and Incompatible with Mission Training Plans (MTP)</b> – Environmental restrictions or requirements cause “work arounds” or introduce behaviors that are not compatible with training requirements</li> <li>➤ <b>Future Training Restrictions</b> – Will lead to restrictions of known or potential future missions (i.e. post transformation, new weapon systems, future restationing of units, etc.)</li> <li>➤ <b>Costs</b> – Diversion of mission dollars to fund mitigation of environmental issues.</li> <li>➤ <b>Personnel</b> - Diversion of mission personnel labor to mitigate environmental issues.</li> </ul>

#### 4.1.4 Criteria for Scoring Regulatory Impacts

Since regulatory violations have many ramifications for the installation, it is important to assess the regulatory implications of the impact if it were to actually occur. Most likely, installations already have a formal process for accomplishing this task. However, it may require additional analysis of range operations. Installation environmental and legal personnel can help determine legal requirements that apply to Army ranges. As the Army's Environmental Performance Assessment System (EPAS) transforms, it will document those known legal requirements for Army ranges and will serve as a tool for installation personnel to systematically perform internal audits of their range activities.

The installation's CFT and other parties that the team believes can contribute (e.g., employees or the regulatory officer) should identify in column G of Table 10, whether or not the environmental impacts are subject to regulation if they were to actually occur. Regulatory impact identifies whether an impact is associated with government requirements, either CONUS or OCONUS. Due to the need to prioritize limited resources, it is important to distinguish government regulation from self-imposed requirements, best management practices, and those items that are not currently regulated. Table 8 includes the recommended approach for capturing the regulatory ramifications of a particular environmental impact.

**The question that should be asked when applying the criteria in Table 8 is:** *If this environmental impact actually occurred, what would be the regulatory impact from among those listed in Table 8?* The selected value from Table 8 should be transferred to Column G of Table 10.

**Table 8. Regulatory Impact Scale**

<b>Regulatory Impact Scale</b>
<b>5 = Regulated</b> – Mandated by a Federal, host nation, state or local government agency ( <i>Automatically Significant</i> ).
<b>4 = DoD / Army policy</b> – Required by Army / DoD regulation or policy.
<b>3 = Regulated in the future</b> – not currently mandated by a government agency, but is either under published proposal or approaching a regulatory threshold.
<b>2 = Army-Wide Best Management Practice or Guidance</b>
<b>1 = Facility Best Management Practice</b>
<b>0 = No Applicable Requirements</b>

### 4.1.5 Determination of Community Concerns

The importance of community concerns regarding environmental issues cannot be overemphasized. Long-term sustainability of Army installations and training requires that one understands and addresses those issues that are important to the installation's neighbors. Many installations have learned tough lessons from negative news coverage, citizen-generated congressional interest, and adverse public reaction. Whether the environmental issue is range generated noise or storing hazardous waste, the ultimate goal is to accomplish the mission, protect the environment and be a good neighbor to the surrounding community. Citizen concerns over real or perceived environmental issues can have a serious impact on the Army's ability to accomplish a given mission. For these reasons, an additional consideration for determining significance should include community concerns. In this case, community concerns reflect how external interested parties perceive an environmental impact. With respect to Army installations, these parties are typically residents in close proximity to the installation and special interest groups. Table 9 provides a few types of common indicators of community concern that should be taken into consideration when making this determination. The resulting score should be entered into Column H of Table 10.

**The question that should be asked when applying the criteria in Table 9 is: *If this environmental impact actually occurred, what would be the likely community response?*** The selected value from Table 9 should be transferred to Column H of Table 10.

**Table 9. Criteria for Scoring Community Concerns**

<b>Community Concern Scale</b> <i>(i.e. If the environmental impact were to actually occur, what would be the community response?)</i>	<b>Community Concern Considerations</b> <i>These general considerations should be taken into account when determining the community concern score.</i>
4 = Public anger / lawsuits	<ul style="list-style-type: none"> <li>➤ Lawsuits</li> <li>➤ Obstruction efforts</li> <li>➤ Number and scope of community complaints</li> <li>➤ Negative / positive press coverage</li> <li>➤ Citizen generated congressional or regulator interest</li> <li>➤ Level of constructive interaction with the community</li> </ul>
3 = Serious community concern	
2 = Some community concern	
1 = Community is unconcerned but could easily become concerned	
0 = Community not likely to become concerned	

### 4.1.6 Determination of Overall Impact Score and Significant Aspects

Once each impact has been evaluated for likelihood, environmental impact, training impact, regulatory impact and community concern, it can then be scored for overall significance. This is accomplished through the use of the following equation:

$$\text{Significance Score} = (\text{Likelihood} \times \text{Environmental Impact}) + (\text{Likelihood} \times \text{Training Impact}) + \text{Regulatory Impact} + \text{Community Concern}$$

OR

$$\text{Significance Score} = (\text{Column D} \times \text{Column E}) + (\text{Column D} \times \text{Column F}) + \text{Column G} + \text{Column H}$$

After all of the factors have been scored, the implementation team determines the overall impact score above which an aspect is to be considered a *significant environmental aspect*, and indicates whether the environmental aspect exceeds that level (i.e., is significant). This numerical cut line establishes a threshold, that if crossed, would indicate significance. The establishment of this threshold is purely subjective and should take into account risk tolerance and resources. This overall score also serves as a useful factor for prioritizing resources for mitigation. In general, the higher the score, the more opportunity for improvement.

In addition to the overall impact score, there are two factors that should have an overriding influence on your determination of significance: regulatory impact and training impact. In Table 10, those impacts that were scored as 5 for regulatory impact (regulated) should automatically be designated as *significant*, regardless of the overall impact score. Additionally, all training impact scores of 4 or 5 should be designated as *significant*, regardless of the overall impact score.

In summary, the three tests below are the criteria for determining significance on Army ranges. If **ANY** of these three criteria are met, the aspect should be considered significant:

1. Overall Impact Score is greater than an installation determined cutoff (Table 10, column I) – as an example in Table 10, any overall impact score > 22 was considered significant. This value will vary considerably on an installation-by-installation basis.
2. Training Impact Score of “4” or “5” (in Table 10, column F).
3. Regulatory Impact Score of “5” (in Table 10, column G).

**Table 10. Scoring Environmental Impacts**

A. Environmental Aspect	B. Activities FCC Code 17868 – Multi Purpose Range	C. Environmental Impact	D. Likelihood (1-5)	E. Environmental Impact (1-5)	F. Training Impact (0-5)	G. Regulatory Impact (0-5)	H. Community Concerns (0-4)	I. Overall Impact Score $Sum((D \times E) + (D \times F) + G + H)$	J. Overall Significance (Set at >22 pts)
Air Emissions (weapons/munitions)	Use of pyrotechnics (smoke)	Air pollution (particulates)	5	2	0	4	1	15	
	Engage targets/ground fire	Air pollution (toxics)	5	3	0	4	0	19	
	Engage targets aerial fire (A-10, CAS)	Air pollution (toxics)	2	1	0	3	0	5	
Air Emissions (veh. exhaust/smoke)	Ingress/egress	Air pollution (CO2)	5	1	0	0	0	5	
Non hazardous waste generation (range/target scrap)	Management of target scrap on range	Soil contamination	5	3	1	4	0	24	Significant
Spills (POL)	Occupy assembly/AAR area (MKT/GP Med)	Soil contamination	1	1	1	2	0	4	
		Water contamination	2	3	1	3	0	11	
		Improper disposal of waste	1	1	2	3	2	8	
	Fueling operations	Soil contamination	3	2	1	2	0	11	
		Water contamination	2	3	1	3	0	11	
		Improper disposal of waste	1	1	2	3	2	8	
Uncontrolled releases (munitions constituents, UXO to water/soil)	Engage targets/ground fire	Soil contamination	4	3	5 (Sig)	5 (Sig)	3	40	Significant
		Water contamination	2	2	1	5 (Sig)	0	11	Significant
	Engage targets aerial fire (Helo/A-10)	Soil contamination	3	3	5 (Sig)	5 (Sig)	3	32	Significant
		Water contamination	2	2	1	3	0	9	
	UXO clearance/EOD support (targets/road)	Soil contamination	2	2	5 (Sig)	3	3	20	Significant
		Water contamination	1	2	1	3	0	6	
Ecological alteration (vegetation alteration)	Engage targets/ground fire	Habitat disturbance	1	1	0	0	0	1	
	Aerial hovering	Vegetation alteration	2	2	1	2	0	8	
Ecological alteration (hydrological alteration)	Maintain stream crossing	Water contamination (sediment)	1	2	1	3	0	6	
		Disturbance to species	2	3	5 (Sig)	4	1	21	Significant
		Stormwater reduction (stream buffer)	POS.	POS.	POS.	POS.	POS.	POS.	***POSITIVE***
Soil alteration	Vehicle maneuver (track/wheels)	Sediment loading to streams	3	3	5 (Sig)	3	0	27	Significant
	Occupy assembly/AAR area (MKT/GP Med)	Erosion	5	3	3	5 (Sig)	0	35	Significant
		Sediment loading to streams	2	3	5 (Sig)	5 (Sig)	0	21	Significant
	Engage targets/ground fire	Erosion	4	2	3	5 (Sig)	0	25	Significant
		Sediment loading to streams	3	3	3	4	2	24	Significant
Ecological alteration (T&E species)	Engage targets/ground fire	Disturbance to species	2	2	1	4	1	11	
	Engage targets/ground fire	Disturbance to species	2	3	3	4	1	17	

#### 4.1.7 Understanding Cumulative Effects Across the Installation

When evaluating environmental impacts on an individual basis, it is easy to lose site of the big picture. In the case of the EMS aspect and impact analysis, an individual impact evaluated on its own may not be significant. However, when combined with many similar impacts across an entire organization, an impact can suddenly be judged as significant. For example, several training range and cantonment area activities may individually contribute small amounts of sediment or pollution to a nearby lake. Taken individually, these impacts may seem minor or insignificant, but if the cumulative effects of all sediment and pollution sources are taken into account for that body of water, the impact may be significant. For this reason, it is important to look across all of the *non-significant* impacts to ensure that there are no common aspects that, taken as a whole, need to be managed. This should be done after all individual ranges have been assessed, and will require a subjective analysis by the members of the CFT, as there is no simple mathematical method to accomplish this.

### 4.2 STEP 5: EXTRACT SIGNIFICANT ENVIRONMENTAL ASPECTS AND THEIR ASSOCIATED IMPACTS FOR EMS FOCUS

The *significant environmental aspects* drive the EMS; therefore, a separate table is developed for all such aspects identified in the preceding step.

Sort Table 10 by all the significant environmental aspects and separate these aspects into another table (Table 11). Table 10 is kept as a record of this process and as a reference source.

At a later stage in EMS implementation, it will be necessary to write a formal procedure to describe the way in which the above steps are carried out. The stepwise procedure presented in this document can be adopted as the formal environmental aspects identification procedure for the organization. However, the organization must be sure to modify the document as needed to reflect any difference between the organization's actual practice and the steps outlined above. At this point, it is useful to note the approach you followed for your reference when making the modifications.

#### **Tools**

*This sorting method is made easier if the tables are in a database or spreadsheet such as MS Access, MS Excel, or a similar program.*



**Table 11. Significant Environmental Aspects**

<b>Environmental Aspect</b>	<b>Activities</b>	<b>Impact</b>	<b>Score</b>	<b>Significance</b>
<b>Non hazardous waste generation (range/target scrap)</b>	Management of target scrap on range	Soil contamination	<b>24</b>	<b>Significant</b>
<b>Uncontrolled releases (munitions constituents, UXO to water/soil)</b>	Engage targets/ground fire	Soil contamination	<b>40</b>	<b>Significant</b>
		Water contamination	<b>11</b>	<b>Significant</b>
	Engage targets aerial fire (Helo/A-10)	Soil contamination	<b>32</b>	<b>Significant</b>
	UXO clearance/EOD support (targets/road)	Soil contamination	<b>20</b>	<b>Significant</b>
<b>Ecological alteration (hydrological alteration)</b>	Maintain stream crossing	Disturbance to Species	<b>21</b>	<b>Significant</b>
<b>Soil alteration</b>	Vehicle maneuver (track/wheels)	Sediment Loading to streams	<b>27</b>	<b>Significant</b>
	Occupy assembly / AAR area (MKT/GP Med)	Erosion	<b>35</b>	<b>Significant</b>
		Sediment Loading to streams	<b>21</b>	<b>Significant</b>
	Engage targets / ground fire	Erosion	<b>25</b>	<b>Significant</b>
		Sediment Loading to streams	<b>24</b>	<b>Significant</b>

As stated earlier, the identification of significant environmental aspects is very important to the development of an EMS because they provide the basis for the entire EMS. Correct determination of significant aspects using the methodology in this document will allow installation leadership to focus resources on mitigating those aspects that are most likely to lead to environmental and training impacts. It will provide focus for environmental programs and serve as the basis for identifying objectives and targets that correlate with the installation's mission.



## ACRONYMS

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ANSI	American National Standards Institute
ARTEP	Army Training and Evaluation Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFT	Cross Functional Team
CONUS	Continental United States
DA PAM	Department of the Army Pamphlet
DPT-M	Deputy for Plans, Training & Mobilization
EO	Executive Order
EMP	Environmental Management Program
EMS	Environmental Management System
EPA	Environmental Protection Agency
EPAS	Environmental Performance Assessment System
EQCC	Environmental Quality Control Committee
EQT	Environmental Quality Technology
FCC	Facility Category Code
FCG	Facility Category Group
GC	Garrison Commander
ISO	International Organization for Standardization
ISR	Installation Status Report
ITAM	Integrated Training Area Management
METL	Mission Essential Task List
MSDS	Material Safety Data Sheet
MTP	Military Training Plan
OB/OD	Open Burn/Open Detonation
OCONUS	Outside the Continental United States
ODC	Ozone Depleting Chemicals
RAB	Registrar Accreditation Board
RCRA	Resource Conservation and Recovery Act
RSIG	Range Sustainability Integration Group
TBUD	Training Budget Documentation
UXO	Unexploded ordnance

# GLOSSARY OF TERMS

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For the purposes of this Environmental Management System (EMS) Guide, the following EMS definitions apply:

## **Activities, products, and services**

A catch-all phrase found in ISO-14001 that captures all the things at a facility or organization that can interact with the environment.

## **Environment**

Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation.

## **Environmental aspect**

Environmental aspects are elements of an organization's activities, products, or services that can interact with the environment. (The environmental aspect of an activity is the part that creates a possibility for an environmental impact. It is equivalent to the concept of "hazard" in safety, which is defined as the mere possibility of a negative event.)

## **Environmental impact**

Change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products, or services.

## **Environmental Management System**

The part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes, and resources for developing, implementing, achieving, reviewing, and maintaining environmental policy.

## **Environmental performance**

Measurable results of the environmental management system, related to an organization's control of its environmental aspects, based on its environmental policy, objectives and targets.

## **Likelihood**

Refers to how often an environmental impact can be expected to occur. It incorporates the frequency of the activity, the frequency of the aspect, and the probability that an impact will occur with each repetition of the aspect.

## **Organization**

Company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration.

## **Potential environmental impact**

A potential environmental impact is defined by its likelihood of occurrence and likely consequences. It is equivalent to the concept of "risk", in safety, which assigns a probability and consequence to the possible negative event that may result from a "hazard."

## **Significant environmental aspect**

A significant environmental aspect is an environmental aspect that has or can have a significant impact to the environment or to the mission.

# APPENDICES

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## APPENDIX A: ARMY TRAINING RANGE ACTIVITY TABLES

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ISR Grouping: Small Arms Ranges			
ISR Sub-Grouping: Small Arms [With Fixed Firing Positions]			
Description: Any of a number of outdoor ranges used for practice and qualification in engaging targets with small arms weaponry from fixed firing positions.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
75025	Skeet Field	Engage Targets with Small Arms Weaponry (pistol, rifle, machine gun). Munitions include small arms ammo up to .50 caliber, live.	
17813	Automated Rifle Range		
17814	Non-standard Small Arms Range		
17801	Basic 10M-25M Range (Zero)		
17802	Non-Automated Field-Fire Range		
17803	Automated Field-Fire Range		
17804	Non-automated Record-Fire Range		
17805	Automated Record-Fire Range		
17831	Machine Gun Transition Range		
17832	Machine Gun Field-Fire Range		
17833	Automated Multipurpose Machine Gun Range		
17893	Squad Defense Range		
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	

ISR Grouping: Small Arms Ranges			
ISR Sub-Grouping: Small Arms [With Dismounted Movement]			
Description: Any of a number of outdoor ranges used for practice and qualification in engaging targets with small arms weaponry while moving through a simulated combat environment.			
Note: Only the Infantry Platoon and Automated Infantry Platoon Battle Course potentially include mounted movement. Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17891	Infiltration Course	Engage Targets with Small Arms Weaponry (pistol, rifle, machine gun). Munitions may potentially include blank or live small arms ammunition up to .50 caliber and/or MILES.	
17892	Fire and Movement		
17894	Infantry Squad Battle Course		
17895	Automated Infantry Squad Battle Course		
17896	Infantry Platoon Battle Course		
17897	Automated Infantry Platoon Battle Course		
17898	MOUT Assault Course (MAC)		
		Dismounted Offensive and Defensive Movement	
		Mounted Offensive and Defensive Movement	
		Combat Simulation	Employ Pyrotechnics
			Employ Smokes
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	

ISR Grouping: Small Arms Ranges			
ISR Sub-Grouping: High Explosive [With Fixed Firing Positions]			
Description: Any of a number of outdoor ranges used to teach soldiers the techniques of engaging fixed and/or moving targets with rifle grenade launchers, recoilless rifles, and/or medium and heavy anti-armor weapons while firing from fixed firing positions.			
Note: FCCs 17883 Hand Grenade Familiarization Course (Live) and 17884 Grenade Launcher, actually fall in the Demolitions ISR Sub-Grouping, but are included here due to similarity in the primary activity. Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17834	40 MM (Grenade) Machine Gun Qualification Course	Engage Targets with grenades and medium to heavy weaponry to include rifle grenade launchers, recoilless rifles, and anti-armor weapons. Munitions include high explosive grenades and medium to large caliber munitions. Some ranges may be adapted for sub-caliber firing or for use with MILES.	
17841	Light Antitank Weapon (LAW/AT-4) Subcaliber Range		
17842	Light Antitank Weapon (LAW/AT-4) Range		
17843	Recoilless Rifle Range [90mm, 106mm]		
17844	Anti-armor Tracking and Live Fire Range		
17883	Hand Grenade Familiarization Course (Live)		
17884	Grenade Launcher Range [M203, M79]		
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	

ISR Grouping: Small Arms Ranges			
ISR Sub-Grouping: Demolition			
Description: Any of a number of outdoor ranges used to execute demolition activities employing explosive charges, including de-mining.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17885	Light Demolition Range [Max NEW=200lb]	Execute demolition tasks to include steel cutting, timber cutting, breaching and cratering.	
17886	Heavy Demolition Range		
17888	Non-standardized Engineer Qualification Range	Execute demolition tasks to include steel cutting, timber cutting, breaching and cratering.	Execute demolition tasks up to 150 lbs NEW
			Execute breaching tasks with Bangalore Torpedo
			Execute live mine training
			Execute timber cutting at Abatis Site
			Execute steel cutting
			Execute road cratering exercises (40 lb charge)
17889	Standardized Engineer Qualification Range		
17887	Flame Operations Range	Train in fabrication and detonation of flame field expedient devices and familiarization and sustainment firing of the M202A1 (flash).	Fuel mixing
			Blasting cap storage
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	



ISR Grouping: Major Weapons and Collective Ranges			
ISR Sub-Grouping: Training Facilities [With Fixed Firing Positions]			
Description: Any number of outdoor ranges used to maintain technical proficiency in the use of mortar, artillery, tank, MLRS, and air defense weapon systems from fixed firing positions or a fixed firing line. Ranges may accommodate live and practice ordnance and some may be configured for sub-caliber firing and/or small arms air defense (SAAD) training.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17851	Mortar Scaled Range [60mm, 81mm, 120mm]	Engage Targets with mortars, artillery, tank guns, MLRS and/or air defense weapons from fixed firing points or an established firing line. Munitions include live and practice rounds. Scaled ranges may use alternate practice munitions (e.g., M840 and M880). Some ranges may be adapted for sub-caliber firing or for use with MILES. Aerospace control may be required.	
17852	Mortar Range [60mm, 81mm, 107mm, 120mm]		
17854	Field Artillery 1:10 Scaled Range [14.5mm]		
17855	Field Artillery Direct-Fired Range		
17856	Field Artillery Indirect-Fired Range		
17857	Multiple launch Rocket System Range		
17861	Tank/Fighting Vehicle Scaled Gunnery Range (1:30 and 1:60)		
17862	Tank/Fighting Vehicle Scaled Gunnery Range (1:5 and 1:10)		
17863	Tank/Fighting Vehicle Stationary Gunnery Range		
17871	Air Defense Gunnery Firing Range [Chapparral, Stinger, Redeye, Vulcan]		
17872	Air Defense Missile Firing Range		
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	

**ISR Grouping: Major Weapons and Collective Ranges**

**ISR Sub-Grouping: Training Facilities [With Mounted Movement]**

Description: - Any number of large, standardized range designed to satisfy training requirements for mechanized infantry, armor units, and combat engineers. These ranges are used to teach crews skills needed to defeat stationary and moving targets in a tactical array. They may also be used for crew qualification dry firing and sub-caliber engagements. All operations are conducted from moving vehicles.

Note: Historical range usage should also be considered when determining potential impact to the environment.

<b>FCC Codes</b>	<b>Facility Description</b>	<b>Primary Activity</b>	<b>Tasks</b>
17864	Multipurpose Training Range	Engage stationary and/or moving targets with small arms, medium and/or large caliber weaponry from a mounted fighting vehicle or tank.	
17865	Automated Multipurpose Training Range		
17866	Tank/Fighting Vehicle Platoon Battle Run (Table XI and XII)		
17867	Automated Multipurpose Range Complex, Light		
17868	Automated Multipurpose Range Complex Heavy		
17869	Combat Engineer Vehicle (CEV) Range		
		Mounted Offensive and Defensive Movement	
		Combat Simulation	Employ Pyrotechnics
			Employ Smokes and/or obscurants
		<b>Ancillary Activities</b>	<b>Tasks</b>
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	

ISR Grouping: Non-Live Fire Training Facility			
ISR Sub-Grouping: NA			
Description: Indoor and/or outdoor facilities used to train soldiers in basic combat skills using wholly inert munitions. This grouping includes gas chambers where CS gas is employed.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17170	Gas Chamber	Practice basic soldiering skills such as donning of a gas mask, bayonet combat, and grenade throwing (using only wholly inert grenade simulation).	
17816	Bayonet Assault Course		
17881	Hand Grenade Accuracy Course (Nonfiring)		
17882	Hand Grenade Qualification Course (Nonfiring)		
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Fueling Operations	

ISR Grouping: Maneuver Training Land			
ISR Sub-Grouping: NA			
Description: Space for ground and air combat forces to practice movements and tactics as specified in the unit's Army Training and Evaluation Program (ARTEP). Different type units may work in support of one another (combined arms), or the unit may operate on its own to practice a specific set of ARTEP tasks. The MPRC-L range can also satisfy mobilization training requirements of armor units. The MPRC-L accommodates all current armor and fighting vehicle proficiency and sustainment tasks as well as providing an arena for combined arms live-fire exercises for light and dismounted infantry. Included in these areas are bivouac sites, base camps, and other miscellaneous training areas. Designated impact areas are not included herein.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17711	Maneuver/Training Area-Amphibious Forces	The MPRC-L meets all range requirements for the following gunnery programs:	
17710	Maneuver/Training Area-Light Forces	Tank Tables VII, VIII, IX, X, XI, XII	
		Bradley Fighting Vehicle Tables VII, VIII, IX, X, XI, XII	
		Infantry Squad Battle Course	
		Infantry Platoon Battle Course	
		Attack helicopter individual and crew qualification.	
		Airborne Operations	Fixed Wing Aerial Flight Path
		Air Assault Operations	Rotary Wing Aerial Flight Path
			Rotary Wing Aerial Hovering
		Amphibious Operations	Watercraft Activities
			Shoreline Activities
		Combat Simulation	Employ Pyrotechnics
			Employ Smokes and/or obscurants
	The MPRC supports the ARTEPS of light and amphibious forces. The following list is representative of ARTEPs for light forces, but not comprehensive.		
	ARTEP 1-112-MTP	Helicopter Operations To Include Attack, Assault, Air Cavalry and Scout	Rotary Wing Aerial Flight Path
	ARTEP 1-113-MTP		Rotary Wing Aerial Hovering

*Appendix A: Army Training Range Activity Tables*

	ARTEP 1-114-MTP		Engage Targets
	ARTEP 17-57-10-MTP		Nap of the Earth Over flights (NOE)
	(ARTEP 5-025-11-MTP)	Engineering Operations Light/	Dismounted Movement
	(ARTEP 5-157-41-MTP)	Airborne/Air Assault	Mounted Movement
	(ARTEP 5-217-10-MTP)		Sustainment Engineering
	(ARTEP 5-025-35-MTP)		Engage Targets
	(ARTEP 5-157-35-MTP)		
	(ARTEP 5-217-35-MTP)		
	(ARTEP 5-025-66-MTP)		
	(ARTEP 5-155-66-MTP)		
	(ARTEP 5-215-66-MTP)		
	(ARTEP 6-037-30-MTP)	Field Artillery Operations Light	Mounted Movement
	(ARTEP 6-102-MTP)		Deliver fires
	(ARTEP 6-115-MTP)		Engage Targets
	(ARTEP 6-115-20-MTP)		
	(ARTEP 7-8-MTP)	Light Infantry Operations	Dismounted Movement
	(ARTEP 7-10-MTP)		Mounted Movement
	(ARTEP 7-20-MTP)		Engage Targets
	(ARTEP 7-20-MTP)		Dismounted Movement
			Mounted Movement
		Mortar Operations	Engage Targets
	(ARTEP 7-91-MTP)		Dismounted Movement
			Mounted Movement
			Engage Targets
	(ARTEP 7-92-MTP)	Scout Operations	Dismounted Movement
			Mounted Movement
	(ARTEP 7-93-MTP)		Dismounted Movement
			Mounted Movement
	(ARTEP 8-279-30-MTP)	Medical Operations/	Ground Ambulance
	(ARTEP 8-437-30-MTP)	Airborne	Air Ambulance
	(ARTEP 8-449(MRI)-30-MTP)		Establish Medical Facility
	(ARTEP 8-449-30-MTP)		Mounted Movement
	(ARTEP 8-518-MTP)		Waste Collection (Infectious Waste)
	(ARTEP 8-705-MTP)		

*Appendix A: Army Training Range Activity Tables*

	(ARTEP 11-065-30-MTP)	Signal Operations	Mounted Movement
	(ARTEP 11-067-30-MTP)		Establish Common Site
	(ARTEP 19-313-10-MTP)	Military Police, Military Intelligence, Surveillance Operations Light	Mounted Movement
	(ARTEP 19-313-30-MTP)		Establish Internment Facility
	(ARTEP 34-335-MTP)		
	(ARTEP 34-337-30-MTP)		
	(ARTEP 34-358-30-MTP)		
	(ARTEP 44-117-11-MTP)	Air Defense Operations/	Mounted Movement
	(ARTEP 44-117-12-MTP)	Airborne/Air Assault	Engage Targets
	(ARTEP 44-117-22-MTP)		
	(ARTEP 44-117-21-MTP)		
	(ARTEP 44-176-15-MTP)		
	(ARTEP 44-116-16-MTP)		
	(ARTEP 44-177-30-MTP)		
	(ARTEP 44-177-35-MTP)		
	(ARTEP 44-117-30-MTP)		
	(ARTEP 44-117-31-MTP)		
	(ARTEP 55-158-30-MTP)	Transportation Unit Operations Light/	Mounted Movement
		Airborne/Air Assault	
		<b>Ancillary Activities</b>	<b>Tasks</b>
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Establish Bivouac	
		Fueling Operations	
		Conduct Vehicle Maintenance	PMCS

ISR Grouping: Maneuver Training Land [Heavy]			
ISR Sub-Grouping: NA			
<p>Description: Space for ground and air combat forces to practice movements and tactics as specified in the unit's Army Training and Evaluation Program (ARTEP). Different type units may work in support of one another (combined arms), or the unit may operate on its own to practice a specific set of ARTEP tasks. The "heavy" designation refers to areas where maneuver is unrestricted and can consist of all types of vehicles and equipment, including tracked vehicles. "Heavy" maneuver/training areas can be used by "light" forces. The MPRC-H accommodates all current armor and fighting vehicle proficiency and sustainment tasks as well as providing an arena for combined arms live-fire exercises. Included in these areas are bivouac sites, base camps, and other miscellaneous training areas. Designated impact areas are not included herein.</p>			
<p>Note: Historical range usage should also be considered when determining potential impact to the environment.</p>			
FCC Codes	Facility Description	Primary Activities	Tasks
17720	Maneuver/Training Area - Heavy Forces	The MPRC-H meets all range requirements for the following gunnery programs:	
	The MPRC supports the following ARTEPs:	Tank Tables VII, VIII, IX, X, XI, XII	
		Bradley Fighting Vehicle Tables VII, VIII, IX, X, XI, XII	
		Infantry Squad Battle Course	
		Infantry Platoon Battle Course	
		Scout Squad Attack Course	
		Fire and crew qualification for attack helicopters	
	ARTEP 1-112-MTP	Helicopter Operations To Include Attack, Assault, Air Cavalry and Scout	Aerial Hovering
	ARTEP 1-113-MTP		Aerial Flight Path
	ARTEP 1-114-MTP		Aerial Attack
	ARTEP 17-57-10-MTP		
	ARTEP 3-207-10-MTP	NBC Operations	Employ Field Test Kits
	(ARTEP 3-457-10-MTP)	Smoke/Decon Operations	Employ Smoke
			Perform Decontamination
	(ARTEP 3-457-30-MTP)	Chemical Operations	Base Cluster Operations
	(ARTEP 5-145-12-MTP)	Bridging Operations	Employ Fixed Bridges
	(ARTEP 5-145-32-MTP)		Employ Floating Bridges
	(ARTEP 5-335-66-MTP)	Engineering Operations	Mounted Movement
	(ARTEP 5-337-10-MTP)		Earth Movement

*Appendix A: Army Training Range Activity Tables*

	(ARTEP 5-337-70-MTP (Digital))		Engage Targets
	(ARTEP 5-337-35-MTP)		
	(ARTEP 6-037-30-MTP)	Field Artillery Operations	Mounted Movement
	(ARTEP 6-037-30-MTP)		Deliver Fires
	(ARTEP 6-115-MTP)		
	(ARTEP 6-395-MTP)		
	(ARTEP 6-397-MTP)		
	(ARTEP 7-7J-MTP)	Mechanized Infantry Operations	Mounted Movement
			Engage Targets
	(ARTEP 7-90-MTP)	Mortar Operations	Mounted Movement
			Engage Targets
	(ARTEP 7-91-MTP)	Anti-armor Operations	Dismounted Movement
			Mounted Movement
			Engage Targets
	(ARTEP 7-93-MTP)	Long-Range Surveillance Operations	
	(ARTEP 8-057-30-MTP)	Medical Operations	Ground Ambulance
	(ARTEP 8-279-30-MTP)		Air Ambulance
	(ARTEP 8-437-30-MTP)		Establish Medical Facility
	(ARTEP 8-449(MRI)-30-MTP)		Mounted Movement
	(ARTEP 8-518-MTP)		Waste Collection (Infectious Waste)
	(ARTEP 8-705-MTP)		
	ARTEP 17-236-12-MTP		
	(ARTEP 11-065-30-MTP)	Signal Operations	Mounted Movement
	(ARTEP 11-067-30-MTP)		Establish Common Site
	(ARTEP 17-236-10-MTP)	Maintenance Unit Operations	Mounted Movement
			Vehicle Recovery
			Vehicle Maintenance
	(ARTEP 17-236-11-MTP)	Support Operations (Logistics)	Mounted Movement
			Fuel Supply
	(ARTEP 17-237-10-MTP)	Tank and Armored Cavalry Operations	Mounted Movement
	(ARTEP 17-385-MTP)		Engage Targets
	(ARTEP 17-487-30-MTP)		
	ARTEP 71-1-MTP		
	ARTEP 71-2-MTP		



*Appendix A: Army Training Range Activity Tables*

	(ARTEP 19-313-10-MTP)	Military Police, Military Intelligence, Surveillance Operations	Mounted Movement
	(ARTEP 19-313-30-MTP)		Establish Internment Facility
	(ARTEP 34-145-MTP)		
	(ARTEP 34-387-30-MTP)		
	(ARTEP 34-388-30-MTP)		
	(ARTEP 34-397-30-MTP)		
	(ARTEP 34-398-30-MTP)		
	(ARTEP 44-117-11-MTP)	Air Defense Operations	Mounted Movement
	(ARTEP 44-117-12-MTP)		Engage Targets
	(ARTEP 44-117-22-MTP)		
	(ARTEP 44-117-21-MTP)		
	(ARTEP 44-175-MTP)		
	(ARTEP 44-175F-MTP)		
	(ARTEP 44-176-15-MTP)		
	(ARTEP 44-116-16-MTP)		
	(ARTEP 44-177-15-MTP)		
	(ARTEP 44-177-14-MTP)		
	(ARTEP 44-177-35-MTP)		
	(ARTEP 44-117-31-MTP)		
	(ARTEP 44-177-30-MTP)		
	(ARTEP 44-117-30-MTP)		
	(ARTEP 44-413-34-MTP)		
	(ARTEP 55-188-30-MTP)	Transportation Unit Operations	Mounted Movement
	(ARTEP 55-288-30-MTP)		
		<b>Ancillary Activities</b>	<b>Tasks</b>
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Establish Bivouac	
		Fueling Operations	
		Conduct Vehicle Maintenance	PMCS

ISR Grouping: Maneuver Training Land			
ISR Sub-Grouping: Training Related Training Facilities (Engineer Qualification Range Complex)			
Description: Structures on training courses, ranges, maneuver areas, training mockups, and similar facilities providing for, or limited in use to, training. The EQRC is used for Engineer qualification operations, to include anti-tank and anti-personnel mine emplacement and clearing, as well as timber bridge building, erection and retrieval of armored vehicle bridges, fording, and rafting.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activities	Tasks
17952	Mine Warfare Area	For training in the placement, arming, disarming, and detection of vehicle and anti-personnel mines using non-explosive training material.	
17973	Timber Bridge Area	For engineer units to practice building timber bridges	
17975	Armored Vehicle Launch Bridge, Raft, and Ford Area	A cleared area beside a creek or ravine used for erection and retrieval of armored vehicle bridges	
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Establish Bivouac	
		Fueling Operations	
		Conduct Vehicle Maintenance	PMCS

ISR Grouping: Maneuver Training Land			
ISR Sub-Grouping: Training Related Training Facilities			
Description: Structures on training courses, ranges, maneuver areas, training mockups, and similar facilities providing for, or limited in use to, training.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activities	Tasks
17954	Wheeled Vehicle Drivers Course	An area for teaching basic driving skills, and for practice in four-wheel drive situations, parking, and backing up.	
		Ancillary Activities	Tasks
		Occupy the Range	Mounted movement and vehicle staging
			Other range activities (e.g., chow, sanitation)
		Establish Field ASP	Issue and reconcile munitions and collect containers
		Establish Bivouac	
		Fueling Operations	
		Conduct Vehicle Maintenance	PMCS

ISR Grouping: Major Weapons and Collective Ranges			
ISR Sub-Grouping: Training Facilities [Aerial]			
Description: Any number of ranges used for individual, crew, and unit helicopter gunnery exercises.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17910	Aerial Harmonization Range	Conduct Rotary Wing Operations and Engage Targets with Aerial Gunnery	
17911	Aerial Gunnery Range		
17913	Close Air Support Range		
17914	Aerial Bombing Range		
		Rotary Wing Aerial Flight Path	
		Rotary Wing Aerial Hovering	
		Engage Targets	
		Nap of the Earth Over flights (NOE)	
		Helicopter Landing and Staging	
		Ancillary Activities	Tasks
		Fueling Operations	
		Re-arming Operations	

ISR Grouping: Ammunitions Storage Facilities			
ISR Sub-Grouping: NA			
Description: Fixed facilities used for the storage of ammunition.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
42104	Explosive Transfer Building, Depot Level	Explosive Safety Sited Above and/or Underground Storage of Ammunition	
42107	Stradley Non-atomic Blast Resistant, Depot Level		
42110	Fuse and Detonator Magazine, Depot Level		
42120	High Explosive Magazine, Depot Level		
42150	Smokeless Powder Magazine, Depot Level		
42160	Special Weapons Magazine, Depot Level		
42170	Guided Missile Magazine, Depot Level		
42180	Igloo Storage, Depot Level		
42181	Ammunition Storehouse, Depot Level		
42182	Small Arms Ammunition Magazine, Depot Level		
42183	General Purpose Magazine, Depot Level		
42184	Ammunition Hut, Depot Level		
42186	Ammunition Storage Structure, Depot Level		
42210	Fuse and Detonator Magazine, Installation		
42215	High Explosive Magazine, Installation		
42225	Smokedrum Storehouse, Installation		
42230	Small Arms Ammunition and Pyrotechnics Magazine, Installation		
42231	Ammunition Storehouse, Installation		
42235	Ready Magazine, Installation		

*Appendix A: Army Training Range Activity Tables*

42240	Fixed Ammunition Magazine, Installation		
42250	Special Weapons Magazine, Installation		
42260	Guided Missile Magazine, Installation		
42280	Igloo Storage, Installation		
42281	Ammunition Hut, Installation		
42283	General Purpose Magazine, Installation		
42285	Unit Small Arms Ammunition Storage, Installation		
42286	Ammunition Storage Structure, Installation		
42288	Ammunition Storage Other than Depot or Unit		
42310	Liquid Propellant Storage, Ammunition Building		
42312	Liquid Propellant Storage, Ammunition Facility		
42311	Liquid Propellant Storage, Ammunition, Structure		
42510	Ammunition Storage Pad		
		<b>Ancillary Activities</b>	<b>Tasks</b>
		Ingress/Egress	

ISR Grouping: NA			
ISR Sub-Grouping: NA			
Description: This grouping includes both dudded and non-dudded impact areas for all live conventional, training and/or inert ammunition and ordnance. This grouping additionally includes the Aerial Bombing Range since any live ordnance bombing operations are required to be conducted over designated dudded impact areas.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
17731	Impact Area, Non-dudded	Impact area for all live conventional, training and/or inert ammunition and ordnance, and including the aerial bombing range.	
17730	Impact Area, Dudded		
17914	Aerial Bombing Range		

ISR Grouping: NA			
ISR Sub-Grouping: NA			
Description: This listing describes all support functions that are conducted and managed on an installation-wide basis.			
Note: Historical range usage should also be considered when determining potential impact to the environment.			
FCC Codes	Facility Description	Primary Activity	Tasks
All	Installation wide	Vehicular movement	Vehicle movement and staging
All	Installation wide		POL Spills
All	Installation wide	Maintain Facility	Repair
All	Installation wide		Maintain
All	Installation wide		Construct
All	Installation wide		Target Maintenance/Replacement
All	Installation wide		Maneuver Trail/Lane Repair
All	Installation wide		Tactical Vehicle/Stream Crossing Repair
All	Installation wide	Dust Control	
All	Installation wide	Scheduling	
All	Installation wide	UXO Clearance/EOD Support	Target Clearance
All	Installation wide		Roadway Clearance
All	Installation wide	Scrap Management	Scrap accumulation on range
All	Installation wide	Recreational Activities	Hunting/Fishing
All	Installation wide		Hiking
All	Installation wide		Camping
All	Installation wide	Erosion Control	Structures/Systems
All	Installation wide		Soil Rehabilitation
All	Installation wide		Land/Soil Stabilization
All	Installation wide	Forestry Management	Logging
All	Installation wide	Land Management	Pest Control Activities
All	Installation wide		Agricultural Leasing/Grazing



*Appendix A: Army Training Range Activity Tables*

All	Installation wide		Prescribed Burning
All	Installation wide	Fire Control Activities	Mowing
All	Installation wide		Fire Breaks
All	Installation wide	Natural/Cultural Resources Management	Field Surveys
All	Installation wide		Fencing/Barriers to Training
All	Installation wide	Other	Other

## APPENDIX B: COMMON ASPECTS AND IMPACTS ASSOCIATED WITH ARMY TRAINING RANGES

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This table contains some examples of the environmental aspects, and impacts that will facilitate working through steps 1-3.

Sample Environmental Aspects	Sample Environmental Impacts
<b>1. Air emissions</b> (OB/OD, particulates, smokes and obscurants (PM 2.5/10), vehicle exhaust, dust, ozone depleting substances, odor, weapons firing, fueling, UXO clearing, prescribed and incidental burning or wildland fires)	<ul style="list-style-type: none"> <li>➤ Toxic releases (EPCRA/TRI chemicals)</li> <li>➤ Impact on species and habitat</li> <li>➤ Reduced visibility</li> <li>➤ Air pollution</li> </ul>
<b>2. Waste generation</b> (range and target scrap collection, storage and disposal, pallets, rags, used oil, batteries, empty chemical containers, chemical lights, range brush, flameless ration heaters (MRE), waste munitions, empty chemical containers, hazardous waste, chemical lights, flameless ration heaters (MRE), waste munitions, solvents, smoke pots, etc)	<ul style="list-style-type: none"> <li>➤ Landfill depletion</li> <li>➤ Air pollution</li> <li>➤ Soil contamination</li> <li>➤ Groundwater contamination</li> <li>➤ Surface water contamination</li> <li>➤ Improper storage / disposal of waste</li> <li>➤ Recycling of waste</li> </ul>
<b>3. Uncontrolled releases to air, water or ground<sup>8</sup></b> (migration of munitions constituents (e.g., metals or explosive compounds), explosive hazard from UXO fired off range when not properly addressed)	<ul style="list-style-type: none"> <li>➤ Groundwater contamination</li> <li>➤ Surface water contamination</li> <li>➤ Soil contamination</li> <li>➤ Ecological damage</li> </ul>
<b>4. Spills (incidental or accidental)</b> (fuel spills, hydraulic leaks, POL, mud transfer of POL spills, solvent spills, above ground storage tank leak, antifreeze spills, etc)	<ul style="list-style-type: none"> <li>➤ Groundwater contamination</li> <li>➤ Surface water contamination</li> <li>➤ Soil contamination</li> <li>➤ Landfill depletion</li> <li>➤ Mismanagement of spills</li> </ul>
<b>5. Release or management of toxics</b> (PCBs, asbestos, beryllium, lead based paint)	<ul style="list-style-type: none"> <li>➤ Groundwater contamination</li> <li>➤ Surface water contamination</li> <li>➤ Soil contamination</li> <li>➤ Mismanagement of toxics</li> </ul>
<b>6. Pesticide use / pest management</b> (forest spraying, agricultural applications, self help, right-of-way applications, land use, troop use, biocontrols)	<ul style="list-style-type: none"> <li>➤ Exposures to non-target organisms</li> <li>➤ Species/ habitat alteration/ disturbance</li> <li>➤ Groundwater contamination</li> <li>➤ Surface water contamination</li> <li>➤ Soil contamination</li> <li>➤ Introduction/removal of non-native species</li> <li>➤ Air pollution</li> <li>➤ Mismanagement of pesticides</li> </ul>

<sup>8</sup> **Uncontrolled Release:** A release resulting from an aspect that is not actively being controlled or managed, where significant safety and health risks could be created (i.e. leaching of munitions constituents such as lead, TNT and perchlorate) into the soil and groundwater). Releases of hazardous substances that are either incidental or couldn't create a safety or health hazard (i.e., fire, explosion, or chemical exposure) aren't considered uncontrolled releases.

*Appendix B: Common Aspects and Impacts Associated with Army Training Ranges*

Sample Environmental Aspects	Sample Environmental Impacts
<b><u>7. Discharges (point and non point subject to permitting requirements)</u></b> including sewage discharges, storm water discharges, sediment, munitions fired into wetlands	<ul style="list-style-type: none"> <li>➤ Groundwater contamination</li> <li>➤ Surface water contamination</li> <li>➤ Soil contamination</li> <li>➤ Air pollution</li> </ul>
<b><u>8. Ecological alteration</u></b> (hydrological alteration, vegetation alteration, habitats, streams, girdling, wetlands, wild land fire, threatened and endangered species, invasive species, etc.)	<ul style="list-style-type: none"> <li>➤ Destruction / enhancement of Vegetation (loss / gain of biomass or natural vegetation)</li> <li>➤ Destruction / enhancement of habitat</li> <li>➤ T&amp;E species encroachment</li> <li>➤ Loss / re-population of T&amp;E species</li> <li>➤ T&amp;E species repopulation</li> <li>➤ Destruction / enhancement of wetlands</li> <li>➤ Hydrology alterations</li> <li>➤ Introduction / removal of non-native species</li> </ul>
<b><u>9. Cultural resource alteration</u></b> (historic properties, archeological sites, cultural landscapes, cultural items, Indian sacred sites and cemeteries)	<ul style="list-style-type: none"> <li>➤ Historic property protection</li> <li>➤ Loss of public access to cultural sites</li> <li>➤ Destruction / protection of archeological resources</li> <li>➤ Destruction / protection of Native American resources</li> </ul>
<b><u>10. Soil alteration</u></b>	<ul style="list-style-type: none"> <li>➤ Sedimentation of water courses</li> <li>➤ Increased runoff / stream flow</li> <li>➤ Watershed alterations</li> <li>➤ Soil compaction</li> <li>➤ Wind erosion</li> <li>➤ Water erosion</li> <li>➤ Soil contamination</li> </ul>
<b><u>11. Generation of noise and vibration (weapons firing, OB/OD, aircraft)</u></b>	<ul style="list-style-type: none"> <li>➤ Loss of T&amp;E species</li> <li>➤ Community disturbance</li> <li>➤ Migration of indigenous species</li> </ul>
<b><u>12. Generation of heat, light or radiation</u></b> , (including radium, tritium, depleted uranium)	<ul style="list-style-type: none"> <li>➤ Destruction / enhancement of habitat</li> <li>➤ Loss of T&amp;E species</li> <li>➤ Light pollution</li> <li>➤ Transient electro-magnetic interference</li> <li>➤ Thermal signature</li> </ul>
<b><u>13. Energy consumption and conservation</u></b> (including petroleum based and alternative fuels, TOE equipment, transportation, maneuver, general electrical power, portable generators)	<ul style="list-style-type: none"> <li>➤ Vehicle emissions</li> <li>➤ Logistical footprint</li> <li>➤ Use / conservation of energy</li> <li>➤ Use of renewable energy sources</li> <li>➤ Loss / gain of fuel load</li> </ul>

*Appendix B: Common Aspects and Impacts Associated with Army Training Ranges*

Sample Environmental Aspects	Sample Environmental Impacts
<b><u>14. Natural resource and raw material consumption or conservation</u></b> (water, timber, minerals, soil)	<ul style="list-style-type: none"><li>➤ Depletion / enhancement of an aquifer</li><li>➤ Degradation / enhancement of water quality</li><li>➤ Disturbance / enhancement of habitat</li><li>➤ Sustainment / use of timber, minerals and grazing lands</li><li>➤ Loss / gain of recreation areas</li><li>➤ Improper management of natural resources</li></ul>

## APPENDIX C: DRAFT RANGE SUSTAINMENT INTEGRATION GROUP ISSUES MATRIX

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The Range Sustainability Integration Group (RSIG) met with select range officers from across the Army MACOMs in October 2000 and identified major range groupings. Range operators were asked to identify environmental issues affecting their ranges. This appendix includes the raw prioritization matrix from that meeting. It may serve as a useful tool for installation personnel in identifying their environmental aspects and impacts.

	Basic Weapons Marksmanship Ranges	Collective Live- Fire/Direct-Fire Gunnery Ranges	Special and Other Live-Fire Ranges	Maneuver Training Areas	Duddled Impact Areas Including Highly Sensitive	Non-Duddled Impact Areas	Off-Post/Non- DOD Training Lands	Other Specified and Scheduled Non-firing Training Facility/Land
Range and Land Grouping								
<b>COMPLIANCE ISSUES</b>								
Berms: Erosion, Collection of Lead, Soil Composite by Area of Country, Testing of BMPs, Materials, Shape	H, Bullets	H, Bullets	NA	NA	NA	NA	NA	NA
Erosion on Roads and Trails	NA	H	NA	H	NA	NA	H	H (AND DROP ZONES)
Dust: Air, Water, Trees	NA	H	H	H	NA	NA	H	H
PM2.5/10 from Smokes /Obscurants	NA	NA	NA	H	NA	NA	H	H
Tank Hulls, Range Scrap, Lead, Copper	M, Lead	M, Lead	M, Scrap	M->H	H	M, Lead	M->H	M->H
Oil/Gas Spills, Mud Transfer	NA	L	NA	H	NA	NA	H	H
Impacts from Urbanization, Noise, Fire	L, H (NGB)	H	H	M->H	M->H (Fire, Noise)	L, H (NGB)	M->H	M->H
<b>CLEANUP ISSUES</b>								
Monitoring for Migration of Heavy Metals to Groundwater	M	M	M	NA	M	M	NA	NA
Contaminant Migration other than Metal	L	L	M->H	NA	H	L	NA	NA
Explosives, Contaminated Soil in Demo Areas	NA	NA	H	NA	NA	NA	NA	NA
Removal of Barrels, Contam. Soil on Hand Grenade Ranges	NA	NA	H	NA	NA	NA	NA	NA
<b>UXO ISSUES</b>								
UXO Detection, Cleanup, Clearance for Existing Ranges	NA	H	H	NA	H	NA	NA	NA
UXO Detection, Cleanup, Clearance for Range Design	H	H	H	NA	H	H	NA	NA
Maintenance/Clearance UXO in Brush	H	H	H	NA	NA (CTT only)	NA	NA	NA
<b>DESIGN ISSUES</b>								
Env. Compliant Design Worked into Standard Designs	H	H	H	H	H	H	H	H
Design to Allow Difference in Angle of Fire	NA	NA	NA	NA	NA	NA	NA	NA
Changing Weapon Systems	M->H (Weapon Dependant)	M->H (Weapon Dependant)	M->H (Weapon Dependant)	M->H (Weapon Dependant)	M->H (Weapon Dependant)	M->H (Weapon Dependant)	M->H (Weapon Dependant)	M->H (Weapon Dependant)
Durability of Battle Positions	NA	M	NA	NA	NA	NA	NA	NA
Controlling Access	L	L	L	L	H	L	NA	L
<b>DOCUMENTATION ISSUES</b>								
Supporting Economic Analysis, Manuals, Guidance	H, Easy Access	H, Easy Access	H, Easy Access	H, Easy Access	H, Easy Access	H, Easy Access	H, Easy Access	H, Easy Access
Central Location for Info across Offices (TC, FM)	RDTE)	RDTE)	RDTE)	RDT&E)	RDTE)	RDTE)	RDT&E)	RDT&E)
Differentiating Sources of Impact (Training)	NA	NA	NA	H	L (Cows)	L	H	H
<b>CONSERVATION ISSUES</b>								
TES Encroachment on Expanding Target Areas	L	M->H	M->H	NA	H	L	NA	NA
TES Impacts on Ranges	L	L	L	H	H	L	H	H
ATTACC-like Model for Munitions Impact based on STRAC	M->H	M->H	M->H	NA	M->H	M->H	NA	NA
Encroachment onto Wetlands	H (Location Dependant)	H (Location Dependant)	H (Location Dependant)	H (Location Dependant)	H (Location Dependant)	H (Location Dependant)	NA by Provision	H (Location Dependant)
Invasive Species	L	L	L	H	NA	L	H	H
Impacts of Other Operations (e.g., Forestry)	NA	NA	NA	H	NA	NA	H	H
Compaction of Soils Around Hardwood Trees	NA	NA	NA	M->H Site Specific	NA	NA	M->H Site Specific	M->H Site Specific
<b>OTHER ISSUES</b>								
Maintenance - Shutdown Time, Personnel, Dollars	H, Beaten Area	H, Beaten Area	H	H	NA	H, Beaten Area	H	H
H - High, M - Medium, L - Low priority								

## APPENDIX D: EMS TEMPLATES

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**The following template is used in step 1 when identifying the environmental aspects of your organizations activities (again it is advantageous to build a similar table in a data base to enable manipulation of data).**

[illegible]

### Appendix D2 – Templates used in Steps 2-3

**The following template is used when competing steps 2 and 3 to list aspects in the left hand side column and identify the environmental impacts of each aspect (again it is advantageous to build a similar table in a data base to enable manipulation of data).**

[illegible]

Appendix D3 – The following template is used when completing steps 4 and 5.

A. Environmental Aspect	B. Activities	C. Environmental Impact	D. Likelihood (1-5)	E. Environmental Impact (1-5)	F. Training Impact (0-5)	G. Regulatory Impact (0-5)	H. Community Concerns (0-4)	H. Overall Impact Score <small><math>SUM((D \times E) + (D \times F) + G + H)</math></small>	I. Overall Significance (Set at >__ pts)